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All communications to be addressed:

"The Editor, Journal of Agriculture, Education Building, Adelaide."

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A. P. BLESING,

Minister of Agriculture.

AGRICULTURAL VIEWS AND COMMENTS.

MISCELLANEOUS.

Agricultural Bureau Conferences—1935.

Fruit (Non-irrigated), at Lyndoch, Tuesday, November 5th (J. S. Hammat, Secretary, Williamstown).

Each Conference will commence at 10.30 a.m. Members of Branches are invited to submit papers and questions for the agenda of the Conference in their respective districts.

Agricultural Shows.

We have been advised by Secretaries of Agricultural Show Societies that their shows will be held on the following dates:—

Minlaton, Wednesday, October 23rd.
Mount Gambier, Wednesday and Thursday, October 23rd and 24th.
Burra, Wednesday, October 23rd.
Lucindale, Saturday, October 26th.
Southern, Port Elliot, Saturday, October 26th.
Tatiara (Bordertown), Wednesday and Thursday, October 30th and 31st.
Millicent, Saturday, November 2nd.
Kingscote, Thursday, November 7th.
Oakbank, Saturday, November 9th.
Kalangadoo, Saturday, November 16th.
Angaston, Saturday, February 29th, 1936.
Mundalla, Wednesday, March 4th, 1936.
Mount Pleasant, Thursday, March 19th, 1936.

Black Cherry Aphis—Correction.

On page 166 of the September issue, sixth line, "usually about 30 per cent." should read "*usually about 3 per cent.*"

S.A. Committee of Australian Dairy Council—Dairy Farm Competitions, 1935.

The South Australian Committee of the Australian Dairy Council, in conjunction with the Department of Agriculture, is conducting Dairy Farm competitions on the following lines, with sectional prizes for:—

1. Conservation of Fodder,
2. Pastures,
3. Dairy Herd,

And a prize for the competitor receiving the highest aggregate for all sections, in which will be included Farm Management, as detailed below:—

1. *Conservation of Fodder—*		
Hay	60 points	
Ensilage	60 points	
Amount conserved per cow	60 points	
Other crops	20 points	
		200 points
2. *Pastures—*		
Condition, &c.	125 points	
Management	75 points	
		200 points
3. *Dairy Herd—*		
Breeding and Dairy Type	50 points	
Condition, &c.	20 points	
Sire: Pure bred	20 points	
Ex tested Cow	10 points	
		100 points

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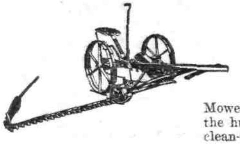

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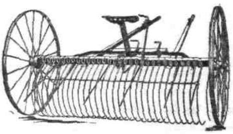

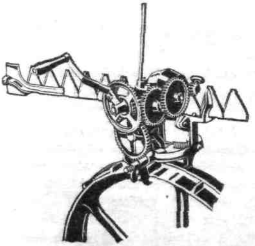

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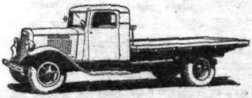

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Farm Management (for consideration in Aggregate prize)—		
Lay out, &c.	40 points	
Sanitation, &c.	40 points	
Records	20 points	
		100 points
		600 points

Any dairyman milking at least seven cows may enter for either sections 1, 2, or 3, and if entering for all three will then be eligible to compete in the aggregate prize for the best dairy farm.

For the purpose of these competitions, the State will be divided into three districts, namely:—

1. Adelaide Hills.
2. South-Eastern.
3. Murray Swamps.

In each District, certificates and first and second prizes to the value of £3 3s. and £2 2s. respectively will be awarded for sections 1, 2, and 3, as well as first and second aggregate prizes to the value of £3 3s. and £2 2s. respectively.

The judges will draw attention to the quality of the different herds, lay out of farms, cleanliness, &c., and the competitions should greatly assist the dairymen of this State.

Dates of closing of competitions are as under:—

Pasture Competition, 31st October, 1935.
Meadow Hay and Ensilage, 1st January, 1936.
Dairy Herd, 1st January, 1936.

Entry fee is 2s. 6d. per entry, and entry forms for the competitions and further particulars may be obtained from the Secretary, Mr. L. S. Smith, c/o Office of the Minister of Agriculture, Flinders Street, Adelaide.

VETERINARY INQUIRIES.

[Replies supplied by Veterinary Officers, Stock and Brands Department.]

"Secretary, Agricultural Bureau, Balumbah," reports horse foundered after feeding on green oats in head.

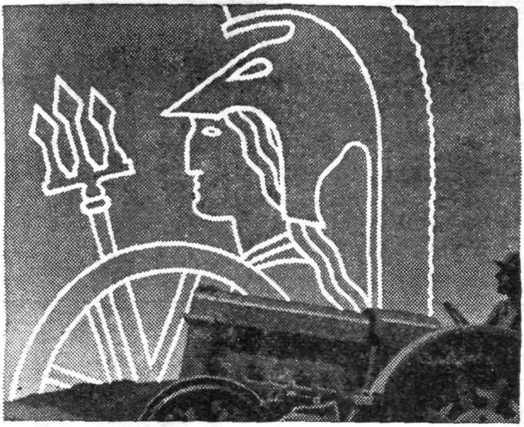
Reply—As soon as the symptoms were noticed the following treatment should have been given:—Drench of ½lb. of baking soda dissolved in 2 pints of water, followed 2 hours after by 1½ pints of raw linseed oil. At this stage give the above treatment, lower the heels of the front feet by using a foot rasp to take the weight off the front of the feet, and then place the animal in water (sufficient to cover the feet as high as the fetlocks) all day, removing at nightfall to a soft bed of straw. Feed only on hay (with the heads removed) mixed with a little bran, and give 1oz. of baking soda twice a day for 3-4 days.

"Secretary, Agricultural Bureau, Warramboo," reports pigs scaly on back.

Reply—The colour of the pigs is not mentioned, and the condition may be due to wind or sun burn, eczema due to mange or lice, &c. It is suggested that the pigs be treated by applying, with a body brush, the following oily dressing:—Raw linseed oil, 1gall.; sulphur, 2lbs. Mix well and apply at intervals of four days. Sump oil from motor vehicles is sometimes used, but may blister the skin if applied in warm weather.

"Secretary, Agricultural Bureau, Blackheath," asks for information re feeding of pollard dry to horses.

Reply—No injurious effects should occur through feeding it dry with the chaff, but as horses work their feed with the lips, this tends to send the pollard to bottom of feeder; therefore it is suggested that the feed be slightly damped. Rock salt and ordinary coarse salt have the same value as a condiment, but rock salt is more econo-___al to use.



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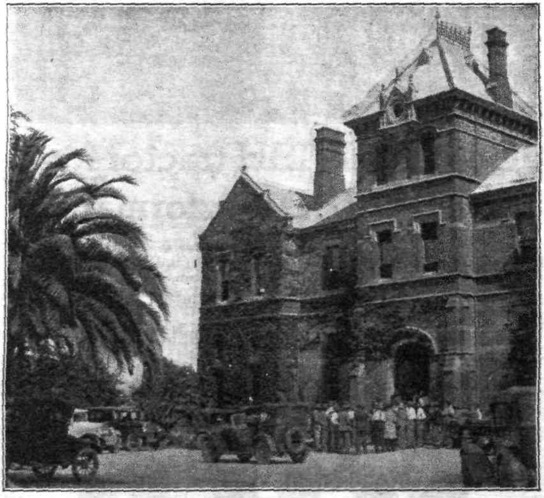
ACTIVITIES AT ROSEWORTHY AGRICULTURAL COLLEGE, 1934-35.

Part I.—*A GENERAL REVIEW WITH SOME THOUGHTS ON PRESENT CONDITIONS IN RELATION TO FARM MANAGEMENT.*

[By ALLAN R. CALLAGHAN, D.Phil., B.Sc., (Oxon); B.Sc.Agr. (Syd.) (Principal).]

INTRODUCTORY.

A lengthy and general report on the work of the College was published last year in six parts, and subsequently incorporated in a bulletin. Copies of this report have been handed to all farmers who visited the College, and some were sent by way of answering inquiries, especially those concerning silage making.



Branches of the Agricultural Bureau make up parties to visit the College and review the Farm Activities. Last year between five and six hundred primary producers inspected the College in parties of from 20 to 80 in number.

There is abundant evidence to show that this comprehensive statement on College activities was well received and that, apart from acquainting farmers with the important work in progress, it was appreciated for its direct usefulness. An attempt will be made this year to emulate last year's report, but because of the striking contrast in seasonal conditions, and because of the development of work programmes only in their infancy last year, the year's activities offer much that is new. This is fortunate, for if there is one thing I am anxious to avoid in

the annual presentation of these reports it is the tendency merely to take the first as a copy and alter relevant details to suit the season's results; this leads to stereotyped statements which serve as nothing more than documentary records for the College archives. At the outset, therefore, I am committing myself to present an original and yet comprehensive statement, which is meant primarily as an extension service directly to assist the man on the land.

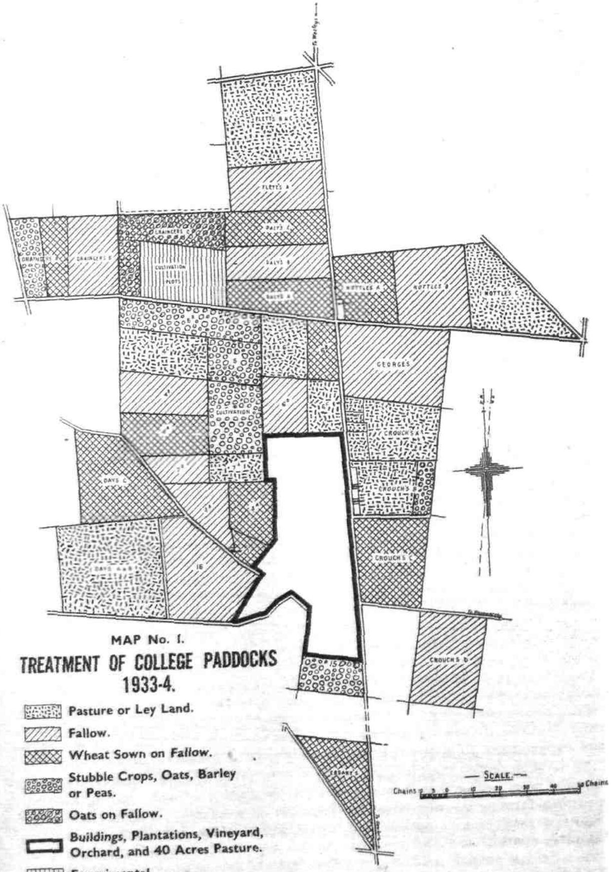
One of the main functions of the College is, after all, to practise the best methods, test others, and then disseminate information so gained to the primary producers concerned.

Last year between five and six hundred primary producers inspected the College in parties of from 20 to 80 in number, and there is every reason for believing that the number will increase as the work being done is more fully appreciated. A day spent in inspecting the College farm and livestock is something of a rush, and only a general impression with perhaps the absorption of a few outstanding details is possible, but by having available a full report on the previous season's activities to read at leisure, after having inspected the farm, ideas, general principles, details, and practical hints are crystallised, and the general scheme of management more fully discerned. So, apart from their general dissemination, these reports become useful handbooks for field days at the College.

The last year in primary production has witnessed no substantial improvements except in the lamb, pork, and bacon trades. The plight of the wheat market is still alarming; though wool values receded significantly, the outlook is at least hopeful. The farmer wholly dependent upon wheat cannot carry on financially successful with present costs of production and low returns; this, unfortunately, is so clear as to be perfectly obvious. Other interests must demand his attention, and one cannot help but feel that the most hopeful line of development is in fat lamb production, with its necessary adjunct, wool production. Then again, the pig industry has undoubtedly a future. Both these can become leading features on farms previously devoted to cereal culture, and apart from the financial advantages offered by such an increase in livestock activities the procedure, is agriculturally sound and desirable, in fact in many cases I would say it is fundamental.

For many years now the College has fostered, advertised, and experimented with fat lamb production both for export and local consumption. Systems of breeding have been evolved and widely accepted, but granting all this, I believe the greatest service rendered has been in pioneering the practice of combining wheat farming with fat lamb production, in the agricultural areas. Pioneer work of this description is not spectacular, for by the time the full effects of such work begin to assert themselves the glamour of the original findings has died, simply because they become part of the store of common knowledge. It is a pleasure to note, however, the decided improvement in the general standard quality of sucker lamb marketed; it is not too much to look upon this as a reflection to some extent of the value of College experimental work and propaganda. Allow it, and it presents an incentive to continue with the good work and exploit more fully the possibilities of fat lamb production in the State.

If development of the fat lamb industry is to proceed in our agricultural areas farmers must realise that farming for their livestock is a better paying proposition than farming to grow wheat for less than 3s. a bushel. This entails to some extent a revolution in outlook for the average farmer, but if the practice is adopted, apart from better economic returns the farm will benefit from the practice. Selling animal produce from the farm is far more economical of plant food than selling in the form of plant produce, and to restore or even maintain the fertility level of the soils on the farm, the greater the number of livestock fed on the property the better.



MAP No. 1.

TREATMENT OF COLLEGE PADDOCKS 1933-4.

These introductory remarks are merely arguments in support of the urgent need for the adoption by farmers of a more diversified system, involving the extension of rotational systems, the realisation of the value of sown pastures, even of a comparatively temporary nature, the carrying of more livestock, especially sheep, and the conscientious realisation of the indispensability of a proper system of regular fodder conservation. All of these aspects are being carefully exploited by the College to the fullest extent circumstances allow and practical requirements warrant.

EXTENSION OF THE ROTATIONAL SYSTEM.

A study of the accompanying maps of the College property will convey to the reader the rotational system in general usage, but there are certain features of the rotations being followed which can only be appreciated by reviewing the farm as a whole and seeking the sequence in individual paddocks.

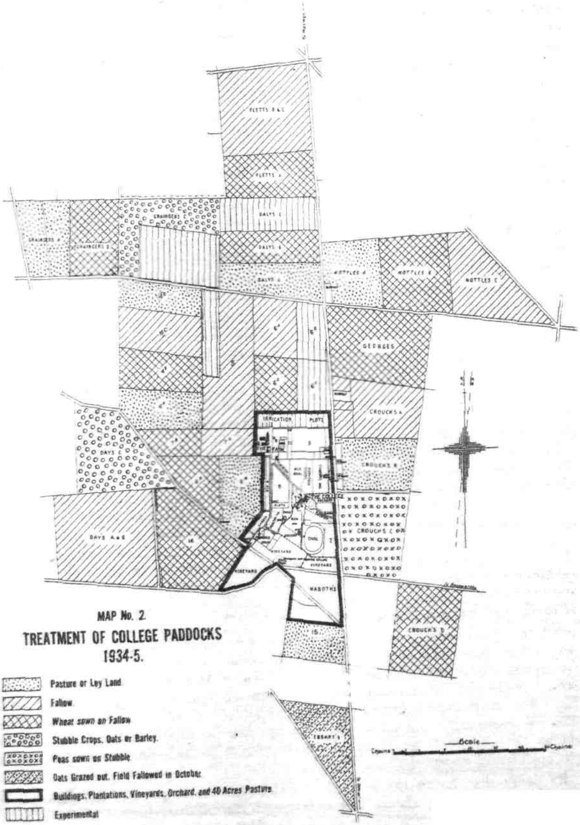
As already stated one of the main considerations of the moment on farms similar to the College property is the incorporation and extension of livestock activities; this entails farming to keep the livestock, and to do this it is imperative to overhaul and extend the rotations so that a greater area is available to stock. The College in the last three years has attempted to lead the way by developing a system which will give increased carrying capacity, and at the same time allow general farming to proceed even though wheat growing is in some measure curtailed, and which in doing so will restore the fertility level in the soil.

The main ideas are (i.) to incorporate crops which can be fed on the farm, (ii.) to rest from cropping altogether one or two paddocks over a period of say four or five years, and (iii.) to conserve as much fodder in the form of hay grain and silage as possible. The first of these calls attention to useful feed and storage crops and the two outstanding are oats and peas. The second is a matter of choosing pasture species suitable to the environment and establishing them in the most economical and practical method possible. Unless this is done paddocks turned out over a period of say four or five years revert to barley grass and other inferior species as soon as the residual effects of superphosphate are gone and the nitrogen level is restored by volunteer legume which after all comes in many areas in great profusion the first year a paddock is left as ley land. The outstanding species for the establishment of such temporary pastures at present appear to be wimmera rye grass, lucerne and the early strain of subterranean clover. Where the medics (volunteer "clover") do not come in of their own accord certainly early subterranean clover should be sown, but in districts where burr and other medics come with such regularity as they do at the College the sowing of early subterranean clover is unwarranted.

All the species mentioned can be sown with a cover crop and for the purpose the College is seeding oats at the rate of 30lbs. per acre, sown with wimmera rye grass, 2lbs., and lucerne 3lbs.; where early subterranean clover is necessary it could also be included, say at the rate of 3lbs. to 4lbs. of seed per acre. The cover crop can be grazed out, cut for silage or left for grain. The most effective treatment is not known but a comprehensive experiment is being carried out at the College from which conclusive results to indicate the best treatment are confidently expected.

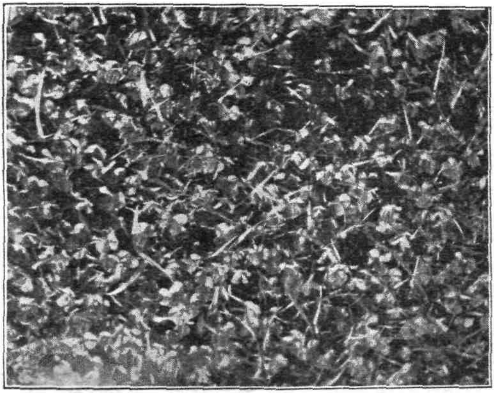
By doing this during the year of establishment of the pasture the paddock is actually producing to almost full extent and the produce harvested enters into the fodder reserves which help satisfy the third main consideration.

These ideas have been put into actual practice and the year just closed has been sufficiently successful to give confidence in their practicability, so that an outline of the procedure adopted will not be out of place.


MAP No. 2.
TREATMENT OF COLLEGE PADDOCKS
1934-5.
Pasture or Ley Land.
Fallow.
Wheat sown on Fallow.
Stubble Crops. Oats or Barley.
Peas sown on Stubble.
Oats Grazed out. Field Fallowed in October.
Buildings. Plantations, Vineyards, Orchard, and 40 Acres Pasture.
Experimental.
DAYS C
DAYS B
DAYS A
GEORGES
CROUCHS A
CROUCHS B
CROUCHS C
CROUCHS D
DAYS
DAYS A & B
IRRIGATION
PLOTS
VINEYARD
NABOTHS
16
15
Scale

A paddock is chosen which has been cropped fairly heavily and which it is considered will benefit most from an extended rest. Following the wheat crop it is sown to peas. The peas are harvested and help considerably both to swell the fodder reserves and balance them from the dietary point of view. The pea crop is followed by oats sown as a cover crop to wimmera rye grass and lucerne, and is either grazed out or cut for silage. The paddock is then left to pasture for its extended holiday and is top dressed with superphosphate annually. Incidentally it is probably quite practicable to sow the pasture using peas as the cover crop.

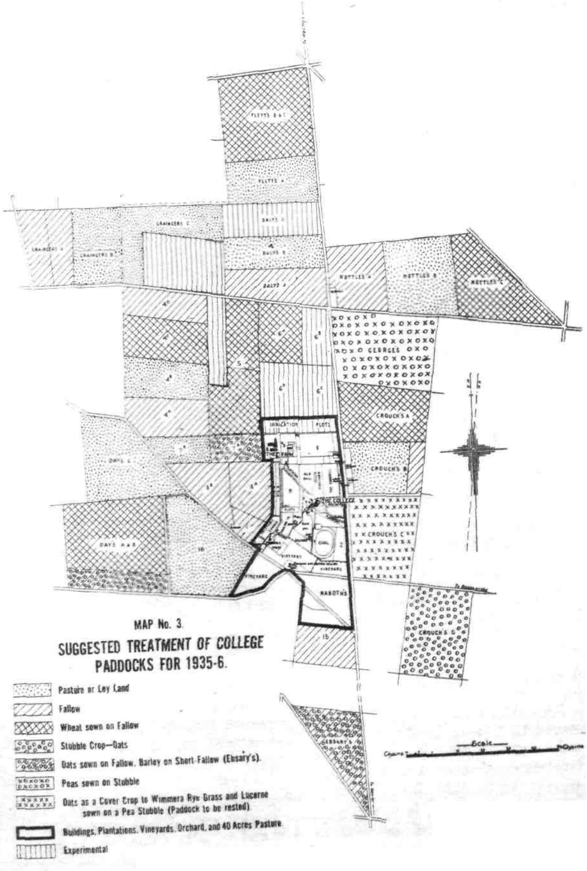
An interesting practical point arises out of this rotation. The pea crop is scientifically well placed as it is sown on stubble land low in nitrogen and is followed by the oats as a cover crop which will take full advantage of the higher nitrogen level following the peas. Farmers object to the pea crop on the farm because they say it fouls the land and undoubtedly it is a dirty crop from the point of view of weed infested areas. As a result of this objection farmers



A splendid association of Early Subterranean Clover and Wimmera Rye Grass in Crouchs B. *The pasture is now in its third year.*

are inclined to fallow for the peas, which is a waste, or they follow the peas with a fallow which is equally wasteful, or as a final alternative they leave peas out altogether, which is deplorable. In the rotation suggested above the peas are followed by a crop utilised for silage, and provided one can bear for a few months with the sight of a weed infested crop, the weeds are soon checked and actually utilised when the silage is taken off.

Now to follow this rotation on the College maps will be of interest. Take the paddock Crouchs C, in 1933 (Map No. 1) this paddock was sown to wheat. In 1934 (Map No. 2) it was sown to peas and in 1933 (Map No. 3) it was sown to oats as a cover crop to wimmera rye grass and lucerne. In 1936 it will be pasture. Refer now, on all three maps, to the paddock Crouchs B, and it will be noted that it has been under pasture all the time. Actually it was sown early in 1933 to wimmera rye grass and lucerne on one half and



MAP No. 3.

SUGGESTED TREATMENT OF COLLEGE PADDOCKS FOR 1935-6.

to wimmera rye grass and early subterranean clover on the other half. (See Illustration 2). It stands now as a splendid demonstration of an established pasture of these species. It will be seen by referring to the paddock Georges that it is sown to peas, next year it will be treated the same as Crouchs C has been, in other words it is approaching its holiday. When Crouchs C enters on its rest, then Crouchs B will be fallowed, and so the process goes on.

Another interesting development which is evidenced in the maps (No. 7 and portion *Days A and B in Map No. 3) is the departure from the recognised* procedure of growing oats on stubble. Remember that under the system suggested it is necessary to farm for livestock. Why not grow oats on fallow? Actually oats to the farmer interesting himself in livestock, is a more important crop than wheat. By sowing oats early on fallowed land, excellent early grazing can be obtained and ultimately superior yields, payably so, obtained as a result of fallow. Incidentally oats for pure seed work must be sown on fallow for the best results.

LIVESTOCK CARRYING CAPACITY.

Accompanying the progress of the above evolution towards a more diversified scheme of farm management should be an increased livestock carrying capacity. Last year, unfortunately, a poor opening was followed by an exceedingly dry winter, with the result that feed was much below average, and crops grown for fodder reserves were short and lacking in bulk. To make matters worse stubble feed was unusually light. The sum total of these effects meant that heavy encroachments were necessary last year on the fodder reserves, but the significant feature is that in spite of the meagreness of the season's feed growth the carrying capacity of the College farm was increased according to schedule and a definite advance on the 1933-4 stocking was made, in point of fact the goal of one sheep per acre of total area was practically reached.

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To explain this more fully it is necessary to point out that the total area of the College farm is about 2,300 acres, but by excluding land occupied by buildings, vines, and orchard, plantations and scrub land which I think is legitimate, the area of agricultural or arable land is reduced to approximately 2,000 acres. Now for the year 1st April, 1934, to 31st March, 1935, which is the period under review, 604 acres were fallowed, 578 acres were rested as pasture or ley land, 737 acres were cropped and 60 acres sown for green feed. This gives a grand *total area of arable land of 1,979 acres;* although these large areas were used for cropping and fallow an equivalent of 1,882 sheep was carried in addition to the 50 working horses allowed for the normal working of the farm. So that although the cropping and fallow programmes occupied their usual large proportion of farm land, *approximately one sheep to the acre* was carried in addition.

The relevant livestock data for the last two years are given below by way of emphasising that in the face of a particularly lean year, and a full cropping and fallowing programme, the livestock carrying capacity of the farm was increased.

TREATMENT OF FARM AREAS IN RELATION TO THE LIVESTOCK CARRYING CAPACITY, ROSEWORTHY COLLEGE.

	1933-4. Acres.	1934-5. Acres.
Area fallowed	545	604
Area cropped	799	797
Area pasture or ley land	635	578
Total Area	1,979	1,979
Mean number of Sheep	939	1,096
Mean number of Cattle (including young stock)	99	90
Mean number of Horses (including young stock)	78	92
Equivalent in Sheep (after allowing for 50 working horses for farm operations)	*1,703*	*1,882*
Sheep per acre	0.86	0.96

The year was such that it was impossible to conserve any more than normal seasonal reserves of fodder, so that, taking into account the increased feeding necessary as a result of the dry season, reserves were considerably diminished. In other words it was a lean year, and contrasted sharply with the season of 1933-4 which was especially bountiful in feed and fodder. Fortunately full advantage of the good year of 1933-4 was taken when large quantities of silage, hay and grain were conserved. Actually it was conserved with the sole object of facing a poor year with confidence. This it did, for apart from enabling full utilisation of the luxuriance of the year before, it acted as a very secure insurance to the carrying capacity of the property. The past two years, indeed, have enabled the College to demonstrate clearly this most important advantage fodder conservation offers, for not only did it permit the maintenance of normal carrying capacity, but it actually enabled an increase to be effected in a year well below average from the point of view of feed and fodder grown.

An attempt has been made herein to convey a general impression of the work undertaken, together with the leading features of management, as a preface to the more specific aspects which are to follow. It is intended, in subsequent instalments, to deal with the details of all phases of farm operations, including experimental work, which are considered of sufficient significance, or which have advanced sufficiently far to warrant publication.

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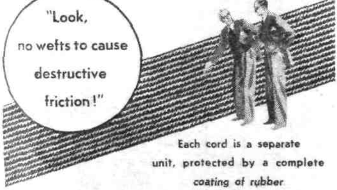

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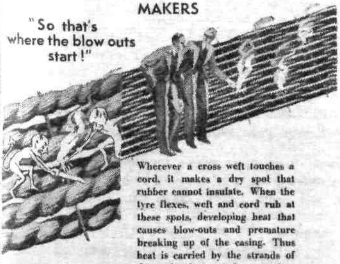

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TURRETFIELD SEED WHEAT FARM.

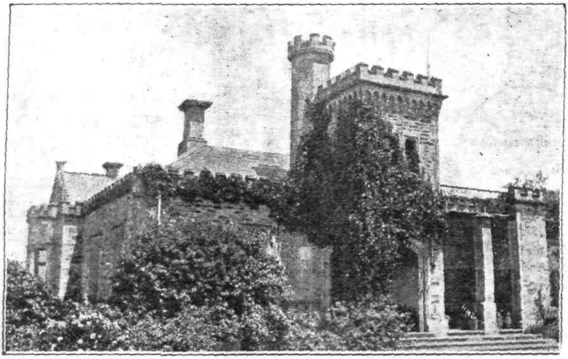
[By R. C. Scott (Supervisor of Experimental Work) and F. E. Waddy (Farm Manager.)]

The chief function of the Turretfield Farm is the production of pure and prolific lines of seed wheat for disposal to farmers.

This work has been in progress for three seasons, and, although the complete course of selection and development is not yet in full operation, considerable improvement in the quality of the grain offered for sale has been effected.

Each year a steady advance in this direction has been made, but it is not until seed built up from that harvested from the stud plots is available for distribution that the highest standard will be attained.

However, notwithstanding this fact, there has been a ready demand for the seed wheat offered and farmers are appreciative of the work done.



Homestead on Turretfield Seed Wheat Farm.

An excessive charge for the selection and graded grain is not made, and during the past two seasons a price of 3s. 4d. per bushel has been fixed.

Tentative orders are accepted many months in advance, and, in fact, some have already been received for delivery from the coming harvest. These, of course, are subject to confirmation when the charge for seed for the current year has been decided upon.

The Farm is conveniently situated, being about 35 miles to the north of Adelaide and 10 miles in a north-easterly direction from Gawler. The total area is 1,604 acres, but the whole of this is not available for cropping.

Portion consists of relatively rough hilly country which provides really good grazing, but does not admit of tillage operations, whilst much is lost because of the fact that the North Para River and Salt Creek both run through the property.

The result is that, when the area occupied by buildings, plantations, etc., is also taken into consideration, it is found that about 1,250 acres are available for cropping purposes. This is worked on a three-year rotation, the cereal crop

being followed by pease, oats for grazing, or natural pasture, with the result that about 400 acres are fallowed for wheat each year and the pasture consumed by a fat lamb breeding flock.

On the average, the soil is of a red loam type with some calcareous patches, whilst the flats adjoining the river are more or less silty in nature. At the same time, there are appreciable areas where the red clay predominates, and as these tend to run together and set hard after rain, they frequently offer serious difficulty to young germinating cereal crops.

THE 1934 SEASON.

Particulars of the rainfall recorded at Turretfield for the last three years comparatively with the average for the 1908-34 period are shown in the following table:—

Rainfall at Turretfield.

	1932.	1933.	1934.	Means 1908-34.
	Ins.	Ins.	Ins.	Ins.
January	0.45	1.44	0.36	0.55
February	0.99	0.13	—	0.70
March	0.92	0.57	0.36	0.74
April	2.60	0.92	1.94	0.86
May	1.14	3.04	0.12	2.32
June	4.00	0.59	0.97	2.14
July	2.27	1.55	1.94	2.06
August	2.44	2.67	2.37	2.13
September	1.71	3.29	2.93	2.34
October	2.29	0.72	2.04	1.69
November	0.34	0.36	2.16	1.01
December	0.89	1.05	0.30	0.94
	20.04	16.33	15.49	17.48

"Useful" Rainfall.

	1932.	1933.	1934.	Means 1908-34.
	Ins.	Ins.	Ins.	Ins.
Seeding rains (April-May)	3.74	3.96	2.06	3.18
Winter rains (June-July)	6.27	2.14	2.91	4.20
Spring rains (August-October)	6.44	6.68	7.34	6.16
Early summer rains (November)	0.34	0.36	2.16	1.01
Total	16.79	13.14	14.47	14.55

The total rainfall for 1934, namely, 15.39 inches, is the lowest recorded since the farm has been conducted on a Seed Wheat basis and is slightly more than 2 inches below the mean for the past 27 years.

However, the "Useful" rain practically equals the average, and it is remarkable to note that from a total of 15.39 inches, 14.47 inches, or 94 per cent., fell during the growing period of the crop.

Reviewing the climatic conditions during the past year, it may be said that generally speaking the April rains were satisfactory, but at the same time they were of a very patchy nature, and certain fields, particularly No. 16 missed showers, whereas adjoining paddocks received quite appreciable falls.

The exceptionally dry weather experienced during the months of May and June, in which the rainfall was 337 points below the average, was not favourable for the growth of crops.

In some areas the grain planted late in the seeding period germinated very irregularly, and some malting occurred, causing a certain amount of resowing to be resorted to. This was especially the case in Field No. 16, which did not receive good rains in April.

Both the spring and early summer rains were above average, with the resul that crops more or less recovered from the setback received in May and June and made strong vigorous growth. Ultimately the plants developed well-fille ears, carrying full plump grain which graded out to a very attractive sample o seed wheat.

WHEAT HARVEST.

The wheat crops were planted on well-prepared fallow land from mid-May t mid-June. The rate of seeding varied between 75 and 80lbs. per acre whilst wit the exception of Field No. 4A, which received 120lbs., was dressed with 156lbs of superphosphate to the acre.

The yields secured are shown in the following table:—

Wheat Yields, Turretfield, 1934-35.

Field No.	Variety.	Acreage.	Total Yield.		Acre Yield.	
			Bush.	Lbs.	Bush.	Lbs.
4	Nabawa	41.64	1,197	0	28	42
4 A	Ford	34.50	967	30	28	2
11	Sword	42.69	1,114	40	26	5
4	Ghurka	44.42	1,155	35	26	1
11	Ranee 4 H	32.29	822	36	25	28
11	Sultan	15.77	301	0	19	5
16	Federation	23.91	372	11	15	33
16	Waratah	44.24	673	0	15	13
16	Gallipoli	26.73	303	4	11	21
		306.19	6,906	36	22	33

In addition to the above, 30.76 acres of land were occupied by Stud Whea plots, Selection plots, &c., and from this area 282bush. of wheat and 27bush of barley were harvested.

The acre yield of 22bush. 33lbs. is slightly better than that for 1934, when th mean return from 348.04 acres was 20bush. 36lbs. per acre.

It is not possible to make a fair comparison between the yields from the indi vidual varieties, because they were planted in different fields and under vastl different soil and moisture conditions.

For example, in Field No. 16 a considerable amount of malting occurred, an it was therefore necessary to resow these patches in the middle of July.

Although this resowing much improved the ultimate yield, the averages from thi field were poor, and consequently the returns from Federation, Waratah, an Gallipoli do not compare favourably with those obtained from Fields No. 4 an 4 A, where a strong healthy germination was secured.

With the exception of Gallipoli, all the grain produced was graded and sol as seed. The demand was very pleasing, some varieties being quickly sold out with the result that, although orders were limited to a maximum number of bags many could not be accepted.

Approximately 200 farmers, situated in almost every district of the State, wer supplied with seed, and there is no doubt that the distribution of this selected grain must be of enormous benefit to the wheat-growing industry generally.

The varieties planted this year, seed of which will be available after the coming harvest, are Sword, Ford, Ranee 4 H, Sultan, Federation, Nabawa, Waratah and possibly Dundee. Seed of the latter variety was purchased from the Wagga Experimental Farm in New South Wales, and if it reaches the Turretfiel standard for purity, will be included in the varieties offered for sale in 1936.

HAY HARVEST, TURRETFIELD, 1934-35.

The great bulk of the Hay area comprised headlands and divisions cut betwe r crop varieties. In all 198 tons were stacked, including 68½ tons from stubble lan d with oats for grazing purposes.

The individual yields from the fallow land are tabulated below:—

Field No.	Variety.	Acreage.	Total Yield. T.	C.	Acre Yield. T.	C.	L.
8	Sword	17.5	51	0	2	18	22
4 A	Ford	2.5	6	10	2	12	0
11	Sword, Sultan, Ranee 4 H	17.2	44	10	2	11	83
4	Nabawa, Ghurka	4.96	12	0	2	8	43
16	Federation, Waratah, Gallipoli ..	14.6	15	10	1	1	26
	Total	56.76	129	10	2	5	59

In addition to the above figures, 68½ tons of Oaten Hay were cut from 44.4 acres of stubble land in Fields Nos. 7 and 15. This area was planted for the purpose of providing grazing for livestock, and after having been regularly fed off until late in the season, was eventually allowed to develop for Hay, returning 1 ton 10cwts. 96lbs. of good quality fodder per acre.

This Oaten Hay (as chaff) is always fed to the horses whilst the fallows are being worked over after harvest and during the seeding period, in order to minimise the danger of strange wheat grains being introduced through the droppings of the animals and thus causing impurities in the wheat varieties to be offered for sale as seed.

FODDER CROPS.

The natural pasture does not make rapid growth in the stubble land at Turretfield, and each year it is the practice to drill cereals, chiefly Oats, on these areas.

In addition, 48 acres of White Brunswick Pease were planted in Field No. 15, and these crops provided excellent grazing for the ewes and lambs until late in December.

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THE BRANDING OF LIVESTOCK.

[By H. O. LAURENTI, Registrar of Brands.]

[Paper read at the 46th Congress of the Agricultural Bureau of South Australia.]

As the Brands Act of 1933 includes many important amendments which are of great interest to stockowners generally, and for the information of members attending the 46th Annual Congress of the Agricultural Bureau it has been decided to give an outline of the legislative enactments and details of requirements expected from stockowners in respect of the branding of stock.

All previous measures in connection with the legislation of brands have been repealed, and the new Brands Act is a consolidating Act incorporating the principal provisions of the previous Acts, with various amendments.

NOT COMPULSORY TO BRAND.

The Brands Act of 1933 was framed for the protection of stockowners. Under its provisions and for a nominal fee, brands and earmarks may be registered. It is unwise for an owner to allow his stock to remain unbranded. It is not compulsory to register a brand or earmark, but any person branding stock without registration is liable to a penalty.

If an owner wishes to register a brand for horses, cattle or sheep, he may apply to the Registrar of Brands, who will supply him with the necessary information.

An important point to remember is that, after having registered a brand, if at any time there is an alteration of address, it is necessary to notify the Department. By failing to do so, there is the liability of the brand being cancelled.

HORSE AND CATTLE BRANDS.

Under the Act, "horses" include asses and mules, "cattle" includes camels. Any person may obtain a horse and cattle brand for his exclusive use. The brand shall consist of one letter and two numerals or one sign with or without two numerals. A single sign brand may be registered, the fee being £2.

The Act provides that only one horse and cattle brand may be registered in the name of any person, unless he is the proprietor of more than one run. In such a case, the Registrar of Brands is empowered to register a separate brand in respect of each run. It is further provided that every owner of horses and cattle shall use the same registered brand on both horses and cattle.

Size of Brands.

The size of a brand on horses and cattle shall not be less than 1½in. or more than 3in. in height, with one exception—when a brand consists of a letter within a sign (as registered under the Brands Acts that have since been repealed), the brand may be 4in. in height.

Order of Rotation of Brands.

Position and Order of Rotation of Brands on Horses.

First position	Near shoulder
Second position	Off shoulder
Third position	Near quarter
Fourth position	Off quarter
Fifth position	Off saddle or off ribs
Sixth position	Near saddle or near ribs

Position and Order of Rotation of Brands on Cattle (other than Camels).

First position	Off rump, hip, and thigh
Second position	Off ribs
Third position	Near rump, hip, and thigh
Fourth position	Near ribs
Fifth position	Near shoulder
Sixth position	Off shoulder

Position and Order of Rotation of Brands on Camels.

First position	Near neck
Second position	Off neck
Third position	Near thigh
Fourth position	Off thigh

Contrary to the practice which applies to the registration of sheep brands, a horse and cattle brand is registered without a fixed position being allotted, but the brand shown on the certificate must be used in the position as set out in the order of rotation; that is, if stock have been previously branded, every subsequent brand shall be placed on the position next in order of rotation to the last brand placed on the stock. For instance, if a horse is branded on the second position (off shoulder), the next position to brand would be the third position (near quarter). If the last position is taken, the first will be next in order of rotation. On clean skins (stock that have never been branded), the owner may use any one of the six positions he so desires. It does not follow that if he brands a clean skin on a certain position he is compelled to brand other clean skins on the same position. If he has, say, six clean skins to brand, he may, if he wishes, use a different position for each. The important point is to remember that the last position used denotes ownership. Every precaution should be exercised when branding stock previously branded that the correct order of rotation is followed out. Should you lose your horse and the last brand (being your brand) on the animal in order of rotation was on the off shoulder, you could claim ownership. If the horse was found and branded on the next position (near quarter), the person branding on this position would have to produce evidence showing that he legally obtained the horse from the owner of the brand on the previous position, that is, on the off shoulder.

The Use of Numerals for Horses and Cattle.

The owner of a registered brand for horses and cattle may apply for registration of distinctive numerals for stud or herd book purposes, to be used on any one of the following positions as set out in the margin of the certificate:—For horses, near or off neck, near or off thigh; for cattle, near or off ear, near or off horn, and near or off neck. The numerals to be used will be consecutive, that is, 1-100 and upwards.

Under the Act, the owner of a registered brand for horses and cattle is granted the concession of using numerals for denoting age without registration and without payment of fee, provided the horses and cattle have not previously been branded, and he may use any numerals immediately under his registered brand. The numerals must not be less than 2in. nor a greater distance than 3in. immediately under the brand. The numerals must not exceed 3in. in height.

Distinctive Brands and Marks.

An owner of a registered horse and cattle brand may register a distinctive brand or earmark for special purposes, such as denoting class, age or description, or

for private reasons. If the owner desires to mark his stock only with a distinctive brand or earmark, he can do so without using his registered brand, or *vice versa. The positions for distinctive brands* and earmarks are as under:—

Horses.	Cattle.
Near neck	Near neck
Off neck	Off neck
Near cheek	Near cheek
Off cheek	Off cheek
Near ear	Near loin
Off ear	Off loin
	Near horn
	Off horn
	Dewlap
	Near ear
	Off ear

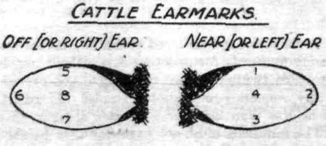
Distinctive brands must be used only on the position as shown on the Certificate of Registration.

Earmarks for Cattle.

Earmarks for cattle must be registered. All earmarks must be made with pliers, the use of a knife being prohibited, except when making a slit. The size of an earmark on cattle must not exceed one-third of the ear. To crop or use a straight cut is illegal. To crop is regarded as a "rogue's mark." By using a crop or straight cut any legal earmark may be removed. Without exception, a registered earmark on cattle can be used only on condition that both ears have never been marked. The reason for this is that earmarks are registered on either one or both ears. A person may think that if he buys cattle that are marked on the near ear only, he can use his earmark, which is for the off ear. He overlooks the fact *that by so doing he converts it into the earmark of a person who has registered* a mark on each ear. Therefore, an earmark on cattle can be made only when both ears are clean or not marked.

For the registration of earmarks the ears are divided into eight positions, namely:—

1. Front or top of near ear.
2. Point or tip of near ear.
3. Back or bottom of near ear.
4. Centre of near ear.
5. Front or top of off ear.
6. Point or tip of off ear.
7. Back or bottom of off ear.
8. Centre of off ear.



Two marks on one position; mark nearest head to be read first.

Under the Act, the "near ear" means on the left side and the "off ear" means on the right side of the animal.

Branding Irons.

Every care should be taken to see that the branding iron is made to agree in every particular with the brand stamped on the margin of the certificate. The face of the brand should be absolutely level, so that, when impressing the branding iron on the animal, all parts of the brand should touch the skin simultaneously. If the brand is made irregular or uneven, the first portion that touches the skin has to be burnt through to the flesh before the full impression is made. Faulty branding irons are cruel to the animals and, in addition, injure the hide to such an extent that there is an unnecessary economic waste of leather. Well-made and even-surfaced brands of sizes prescribed under the Act applied with contact sufficient only to destroy the hair roots will leave a plain and permanent brand, and will not damage the hide or cause the animal unnecessary pain. Fortunately, the conditions of branding, as far as this State is concerned, have been improved. Local tanners have expressed their appreciation of this fact. When it is noticed that stock or hides or leather are badly branded, the owner is communicated with and it is pointed out to him that he is liable to a penalty under the Act. The result is that faulty branding is remedied, thus saving a needless waste of leather. Brands should not be made too large. Letters and numerals 2½in. in height are quite large enough. For young stock, 2in. letters are ample.

EXPORT BRANDS FOR HORSES.

A special brand for horses for export may be registered. The brand must consist of one or more letters or signs or a combination of letters and signs, with a dot impressed to the left of and on a line with the lower part of the brand. The brand must be used in the position stated on the Certificate of Registration, and the size of the dot must not be more than 1in. and not less than ½in. in diameter.

SHEEP BRANDS.

Sheep Brands Districts.

Under the new Act, the sheep brands districts have been increased from four to six, and are as follow:—

No. 1. South-Eastern District, consisting of the counties of Albert, Alfred, Russell, Buccleuch, Chandos, Cardwell, Buckingham, MacDonnell, Robe, and Grey.

No. 2. Western District, consisting of all territory in the State enclosed by a line commencing at the south-eastern corner of the county of Manchester; going thence westward and northward along the northern boundaries of the counties of York, Buxton, LeHunte, the eastern boundary of the county of Robinson, the eastern and northern boundaries respectively of the counties of Dufferin and Way, the northern boundary of the county of Kintore, the eastern and northern boundaries of the county of Hopetoun, to the 132nd degree of longitude; thence northward to the 30th degree of longitude; thence westward to the western boundary of the State; thence southward to the sea-coast; and thence along sea-coast returning to the point of commencement.

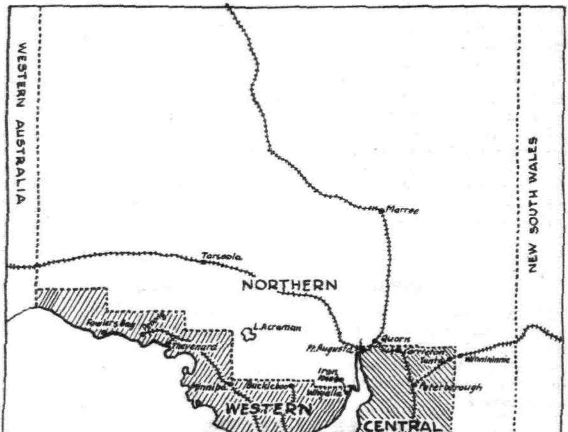
No. 3. Kangaroo Island District, consisting of the county of Carnarvon.

No. 4. Abattoirs District, consisting of all the land in sections 97 and 720, hundred of Yatala, which is vested in the Metropolitan Abattoirs Board.

No. 5. Central District, consisting of the whole of the counties of Frome, Dalhousie, Herbert, Kimberley, Victoria, Stanley, Burra, Daly, Fergusson, Gawler, Light, Eyre, Adelaide, Sturt, and Hindmarsh.

No. 6. Northern District, consisting of the whole of the State not included within any of the districts above described.

The map hereunder will give, perhaps, a better impression as to the location of the various districts in the State.



Registered Paint Brands.

Under the Act, "sheep" include goats. Any owner of sheep may register a paint brand for his exclusive use. The same paint brand may be registered to ny other person if in another district. Two or more paint brands, although con-Two ting of the same design, may be registered if in different positions or colours. Under the four positions are top of shoulders, near ribs, off ribs, and rump. The colours on the right ly used are black, red, blue, and green. Therefore, it is possible to register trict a brand of exactly the same design for 16 different sheep owners

by varying the positions and colours. Only one sheep brand shall be registered *to any owner, unless he is the proprietor of more than one holding, run, or* station. The size of a registered sheep brand must not be less than 2in. nor more than 4in. in height, unless the brand consists of a letter within a sign, in which case the brand may be 5in. in height. If the brand consists of a dot, it shall not be less than 1in. nor more than 2in. in diameter. Tar is injurious to wool and is, therefore, prohibited under the Act. A paint brand shall only be made with oil paint. The owner of a registered sheep brand may use any of the numerals from two to nine on his sheep in paint on any position as a distinctive brand for his sheep, provided that he uses only one of such numerals on any one sheep, and the numeral as used shall not exceed 4in. in height. If sheep already branded with a numeral are purchased it does not debar the new owner the right of using a numeral. Tags may also be attached to the back of the off ear of female sheep and the near ear of male sheep, the one ear of each sex being reserved for registered earmarks which will be referred to later. The same ear as is used for tags may be used for private earmarks, without registration, by a person who is a registered owner of a sheep brand. Many owners of sheep are under the impression that if they purchase sheep that have been previously branded on their registered position they can brand the sheep on another position. This is entirely incorrect, as a registered sheep brand can only be used on the position set out in the Certificate of Registration. If a sheep owner obtains sheep that are branded on the position allotted to him he should not use his registered brand. Should he do so he will render himself liable to a penalty for a breach of the Brands Act. For instance, owing to the numerous combinations of sheep brands registered, a person branding sheep with his registered brand next to the brand on his allotted position will probably convert it into a registered brand in the name of some other person, thus committing an offence under the Act. It may also lead to other complications, such as blotch branding. The alternative is that, instead of using his registered brand, he may use any one of the numerals from two to nine on the sheep in any colour paint and on any position. To obviate unnecessary branding, if an owner intends to dispose of or sell his sheep soon after shearing, or for any other reason, he may use a numeral instead of his registered brand.

Care in Making Sheep Brands.

Sheep brands should be well made, so that the brand comes out distinctly on the sheep. Three-inch brands are a popular size. The letters should be well spaced. To prevent blotching or smudging, the face of the brand should be flat with the edges bevelled or made with a round surface.

Tattoo Marks.

An owner of a registered sheep brand may register a tattoo mark. Unlike paint brands, there is no fixed position for tattoo marks. Provided that there is no tattoo mark on the sheep, any one of the following positions may be used:—

First position	Near or left ear
Second position	Off or right ear
Third position	Underneath part of the tail
Fourth position	Inside near or left forearm
Fifth position	Inside off or right forearm
Sixth position	On the inner side of the near or left hind leg
Seventh position	On the inner side of the off or right hind leg
Eighth position	On near brisket
Ninth position	On off brisket

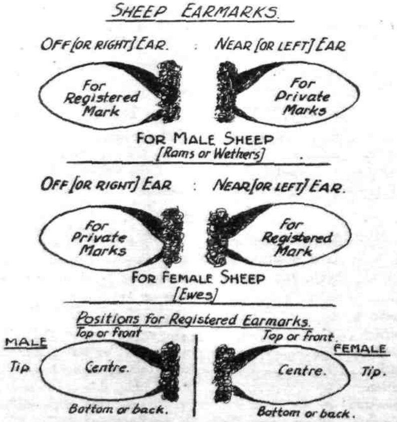
If there be a previous tattoo mark on the sheep, the next position in order of rotation should be used. The last position used in order of rotation shall prove ownership.

Registered Earmarks and Firebrands.

The owner of a registered paint brand may obtain the registration of:—

(*a*) An earmark;
(*b*) A firebrand.

In addition to the earmark or firebrand being registered in the name of the person, it is also registered for the run or farm on which the mark is being used. *Upon ceasing to be the proprietor of the run or farm,* the earmark or firebrand shall be deemed to be cancelled, unless steps have been taken to have the earmark or firebrand transferred to the new owner. An earmark or firebrand shall be registered for exclusive use in the sheep brands district within which the farm is situated. Only one earmark and firebrand shall be registered, unless the owner is the proprietor of more than one run, in which case, at the discretion of the Registrar, a separate earmark and firebrand may be registered for the additional properties. *Every registered earmark for sheep shall, in the case of male sheep,* be placed on the off or right ear, and in the case of female sheep, on the near or left ear. As previously stated, earmarks may be used on the off or right ear of female sheep and the near or left ear of male sheep without registration by the owner of a registered sheep brand. In any case, no earmark shall exceed $\frac{3}{4}$in. in length or $\frac{1}{2}$in. in width or diameter unless such earmark is a slit, which may be $1\frac{1}{4}$in. in length from the tip of the ear. If sheep have previously been earmarked with a registered earmark, no person shall place any other earmark on such ear. As in the case of cattle, to crop the ear of any sheep is an offence under the Act, and persons having in their possession sheep with their ears illegally earmarked or cropped are liable to prosecution. The diagrams hereunder will serve to illustrate the ears reserved for registered and unregistered earmarks for sheep; also the *positions in which the marks are used.*



The positions for a registered firebrand are determined by the Registrar of Brands, and shall be placed *on the face or horn of the sheep and shall not exceed* $1\frac{1}{2}$in. in height.

STUD-STOCK BRANDS.

For the benefit of stud-stock owners, provision has been made for the registration of special stud-stock brands. If a person satisfies the Registrar of Brands that he is a member of an association which has been formed for the purpose of encouraging the breeding of pure-bred stock, he may apply for the registration of a brand. A stud-stock brand may be granted to a person who is not the owner of any registered brand for horses, cattle, or sheep. The owner of a stud-stock brand may without registration use any one or more of the numerals 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 in any position as a distinctive brand for his stud stock.

POUND BRANDS.

Pound brands are registered without fee in the name of every public pound in the State. For horses and cattle, a triangle with two numerals is issued and, for sheep, a green broad arrow on the top or back of the head. If stock are sold in pound, they must be branded with the brand of such pound before delivery. It is the duty of every poundkeeper, when horses and cattle are impounded, to notify the owner of the registered brand last in order of rotation of the fact and, in the case of sheep, to notify the owners of every registered brand which appears on the sheep. If a poundkeeper neglects to give notice to owners, as required by the Act, neglects to brand horses, cattle, or sheep sold out of pound, or refuses to give any necessary information within his knowledge when requested by an inspector or police officer, he shall be guilty of an offence under the Act.

TRANSFERS OF BRANDS.

When a person dies, his registered brand may be transferred by the executors or trustees of the deceased. Provision is also made for a person who has no further use for his brand to apply to have it transferred to another person. It is a common practice for brands to be used without first having been transferred. In an estate where everything in the deceased's will is left to the sons, the impression is that the sons can continue using the brand without first having it transferred to their names. By so doing they are liable to a penalty for a breach of the Act. This also applies to a person who has sold his farm or business. The buyers, or new owners, cannot use the seller's brand without first having it transferred. The Registrar may, at his discretion, refuse to transfer the registration of any brand or mark. Sheep brands, tattoo marks, sheep earmarks, and sheep firebrands can only be transferred for the district in which they are registered.

CANCELLATION OF BRANDS.

An important amendment in the present Brands Act is the cancellation of all brands after advertising within a prescribed time (not less than six months after the first publication of the notice of cancellation), unless the owner applies in writing for the retention of the brands registered in his name. When making application to retain brands, no fee is payable. The reason for this amendment was to cancel brands that were not in active use and to bring the department's records up to date. This amendment was brought into force in June, 1934, and, after the necessary notice had been given, approximately 20,000 brands and marks were cancelled, as the owners did not apply for their retention. Under the circumstances, if owners who failed to apply wish to have their brands re-allotted, it will be necessary for them to pay the fees as prescribed under the Act. So as to safeguard the interests of persons who may have overlooked the fact of applying for the retention of their brands, it has been decided not to re-issue such brands until five years after they have been cancelled.

REGISTERS, QUARTERLY STATEMENTS AND DIRECTORIES.

All brands and marks registered, transferred, and cancelled are recorded in their respective registers. At the end of every quarter a statement is published in the *Government Gazette*. Provision is also made for the publication of Horse and Cattle and Sheep Brands Directories. Any Brands Directory or quarterly statement shall in any action or prosecution be received without proof as *prima facie* evidence of the matter contained therein.

MISCELLANEOUS.

Powers of Inspectors and Police.

The Act gives power to any Justice or Inspector or Member of the Police Force to enter upon any run, farm or other premises to inspect any stock, hide or skin, or branding iron or instrument, which may be seized if it is considered that an offence under the Act has been committed. When stock are seized, they may be impounded at the nearest pound, and, if the pound is more than five miles distant, the stock may be held until such time as the offence has been dealt with. Any sheep or cattle having their ears marked contrary to the provisions of the Act may also be seized by an Inspector, and further may be sold or otherwise disposed of as directed by the Minister.

Special Departmental Brands.

Any officer of the Stock and Brands Department may firebrand any cattle on such position as he may think fit with the mark ↑ R for the purpose of indicating that such cattle have been found infected with a contagious disease within the meaning of the Stock Diseases Act. Any officer of the Department of Agriculture may brand any cattle with a brand approved of by the Registrar in any position for the purpose of indicating that such cattle have passed the herd test conducted by the Advisory Committee for the Improvement of Dairying.

Indistinct Sheep Brands and Re-Branding.

When a sheepowner's registered brand has become indistinct he must not re-brand unless he first obtains permission in writing from the Registrar of Brands. Having obtained permission, he must re-brand the sheep on the same position as the brand which has become indistinct. Special notice is drawn to the fact that no provision is made for re-branding sheep owned by a person bearing another person's registered brand.

OFFENCES AND PENALTIES.

Persons branding with unregistered brands; destroying, altering, or defacing brands; disposing of any hide or skin with brands defaced or altered, or having same in his possession; cropping ears of cattle or sheep or illegally earmarking; marking the ear of any stock bearing a registered earmark shall be guilty of an offence under the Act and be liable to a penalty of not less than £2 and not more than £100, or shall be liable to be imprisoned for a term not exceeding six months. For further offences, such as branding otherwise than as prescribed; improperly using numerals on sheep, or earmarks, or tags, unless the owner of a registered brand for sheep; removing or mutilating any ear on any sheepskin (unless it is removed immediately before the skin is subjected to the tanning process); branding with a brand that is not registered in the name of the owner of the stock; introducing into the State any cattle or sheep illegally earmarked; hindering or obstructing an Inspector or other officer in carrying out his duties under the Act, a person shall be guilty of an offence and liable to a penalty of not more than £25 or three months' imprisonment.

In regard to illegally earmarked stock introduced from other States, it will be no offence under the Act if the stock are slaughtered at the Metropolitan Abattoirs

within 10 days after their introduction or at any place, as the Minister may direct. The Minister also has power to extend the keeping of illegally earmarked stock in this State for any period.

In regard to earmarks on sheep, any person who is the owner of, or in possession of, any sheep with its ear marked contrary to the provisions of the Act is also liable to a penalty. This includes using unregistered marks on the ears of sheep reserved for registered marks.

Any person who wilfully brands stock of which he is not the rightful owner, or who wilfully uses the brand or mark in the name of any other person shall be guilty of a felony and liable to three years' imprisonment.

LEGAL PROCEDURE.

Except for any indictable offence, such as wilfully branding and not being the rightful owner, any offence under the Act shall be heard in a summary way *before a special magistrate or two justices. If the magistrate or the justices* are of the opinion that the person charged should be prosecuted for an indictable offence, he or they may commit such person to take his trial for the more serious offence. Magistrates and justices may then make an order as to costs. Proceedings for all offences other than indictable offences may be instituted at any time within 12 months after the commission of such offence. Indictable offences may be instituted at any time.

CONCLUSION.

Special attention of stockowners is drawn to the following. In order to prevent the illegal use of brands or marks the Registrar must be advised immediately of:—

(*a*) The death of owner of a registered brand or mark.
(*b*) Any alteration in the composition of a firm or partnership.
(*c*) *Any alteration of run or postal address.*
(*d*) Disposal of property for which brand or mark is registered.
(*e*) An owner having no further use for brands or marks.

The necessary action will then be taken regarding transfer or cancellation of any particular brand or mark.

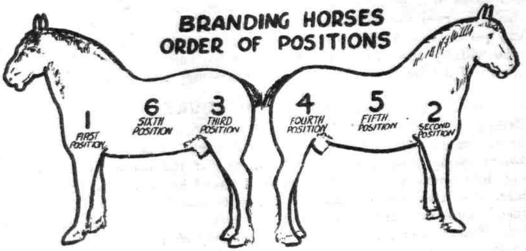
SCALE OF FEES.

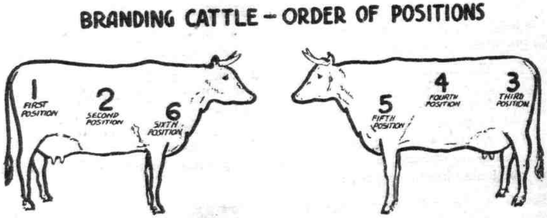
The undermentioned fees shall be paid in respect of the matters set opposite to such matters respectively:—

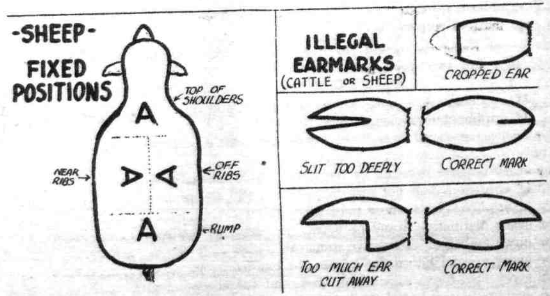
	£	s.	d.
For every registered brand for horses and cattle consisting of a letter or sign and two numerals—			
If applicant does not own more than 100 head	0	10	0
If applicant owns more than 100 head	1	0	0
For every registered brand for horses and cattle, consisting of a sign only	2	0	0
For every registered brand or registered tattoo mark for sheep—			
If applicant does not own more than 1,000 sheep	0	10	0
If applicant owns more than 1,000 sheep	1	0	0
For every distinctive brand or mark for horses or cattle	1	0	0
For any number of distinctive numerals	1	0	0
For every special brand for horses for export	1	0	0
For every registered earmark or firebrand for sheep	0	10	0
For every registered stud stock brand	0	10	0
For every transfer	0	10	0
For every cancellation made on application	0	5	0
For every duplicate copy issued by the Registrar of any certificate of registration	0	2	6

DIAGRAMS OF POSITIONS.

The order of rotation of positions for branding horses and cattle and the fixed position for branding sheep, also the definitions of illegal earmarks are as illustrated below:—







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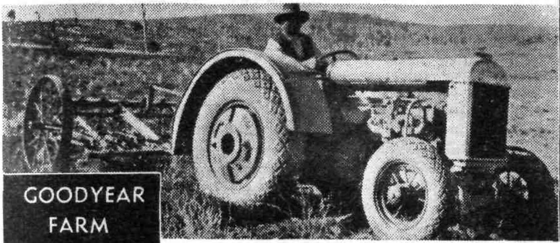
ACROSS THE FARMS OF AUSTRALIA



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More Uses
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Less Repair
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GOODYEAR

FARM IMPLEMENT TYRES

MADE IN AUSTRALIA

DAIRYING.

[CHAS. E. VERCO, Mount Compass.]

[*Paper read at the 46th Congress of the Agricultural Bureau of South Australia.*]

Dairying is a big subject, because of the many branches that come within its successful accomplishment, and many people tackle the job as though all that was necessary was a bucket, a separator, creamcan, and a cow. There is, however, as much science in dairying as any other branch of rural life. In fact, seeing what is required of a high producing herd, and the many failures encountered, it is questionable if dairying does not require more thought and consistent care than other phases of rural activity. There is the suitable property to select; fodders to grow; rotational grazing to consider; water supply; reserve fodders; the right breed and class of cow for the business intended to follow, whether milk, cream, or maybe cheese; selection of herd sires; care of cows before, at, and after calving; the care of milk and cream; and on top of all that, the dairy farmer is supposed to be business man enough to keep abreast of the world, so that he can devise and put into successful working a scheme that will give him marketing results that will bring him a little profit and, if lucky, a living.

SELECTION OF THE PROPERTY.

This is rarely given sufficient thought. Most farmers having property bend their dairying management to what it will do. Possibly this obstacle can never be overcome, at all events in South Australia, because dairying is but a sideline with these folk. But the man who sets out with the idea of dairying should select his property as carefully as would a gardener. There are certain things desirable for dairying that should not be overlooked. There is country in South Australia to carry plenty of dairy farmers, country in good rainfall areas lying idle for the want of enterprising men with a bit of capital to go and develop it. Water is very necessary for dairying, and if there is sufficient for even a little irrigation, so much the better. Failing irrigation, there needs to be some provision made for fodders of a suitable type to carry over the time of the year when the selected district is short of feed, be it autumn, winter, or summer. A property that is able to produce a balanced ration of clover and suitable grasses for a fairly lengthy period of the year, with sufficient high land to allow the cows to camp on, should make a nice dairy farm, provided it has sufficient water to supply the intended herd.

Ensilage, sweet hay, and concentrates should maintain the herd in good milk flow. In almost every district and under varying conditions, there are to be found men who have overcome the natural disadvantages of their surroundings, and provided suitable substitutes for the natural insufficiency of milk producing foods that their districts are short of, at certain periods of the year. The wonder is that others do not follow their example, but frequently the man across the fence is a failure and often a nuisance to the progressive farmer.

SUBDIVISION AND PASTURE MANAGEMENT.

One more point is worthy of consideration, especially in the areas of sufficient rainfall, where the environment is such as to allow of suitable pasture development; the practice of subdividing the property into small paddocks and practising rotational grazing. Some properties lend themselves to this system more than others. The practice is fairly old, but its application is a distinct advantage in both producing and feeding good quality pastures, and carrying more stock on the place.

The fresh, young feed of two or three inches high is very much appreciated by stock, and they respond marvellously, in both milk and meat production. There should be sufficient paddocks available to keep the stock moving every few days, to get the best results. The chief drawback to the system is the cost of fencing. In some parts of the world the stock are tethered and moved at intervals during the day. This, possibly, is a cheaper way, but would take a lot of labour with herds in Australia. However, the principle is there, and one must get as close to it as possible, under his own circumstances.

In the pasture management of a dairy farm one cannot close without reference to the annual topdressing with superphosphate. Our plan is to put on nothing less than a bag to the acre, and on picked spots, more. Feeding pastures must be viewed much the same as feeding stock. Some stock are not worth feeding, some may pay, good ones do pay. A pasture of poor quality grasses may not respond financially to the cost of topdressing, but a dense pasture of valuable clovers and grasses will pay. The pasture will improve in denseness, with the corresponding heavier carrying capacity. The stock grazing on the topdressed pasture will be healthier and more productive.

CHOOSING THE STOCK.

In the selection of cows one must be guided by the business to be followed, whether for cream, milk, or cheese. The qualities of the farm, its proximity to markets, and the inclinations of the farmer must also be considered.

All breeds have their place in the economic functioning of a country, especially one with such a variety of soils, climates, and distances as South Australia. In the heavy rainfall districts, where the soil becomes waterlogged in winter, the lighter class of cattle have a distinct advantage, for the pastures do not get pugged and consequently destroyed so much as they would with the bigger types. In some of the peaty country in the Mount Compass district it is questionable if the heavier cattle could get on the ground safely.

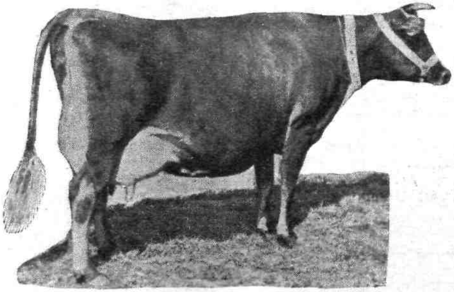
For cream production my selection is unhesitatingly the Jersey cow. She is docile, hardy, and a rich and plentiful creamer. There is not the framework to feed as in the larger breeds. There is no place in the State, to my knowledge, where this fascinating and remunerative little cow has not penetrated and proved herself the ideal and economic cream producer. Even here, a buyer needs care, for the ability to produce and reproduce stock of the same quality rests in the strain and not in the breed. There are good and bad in all breeds, so that

whichever breed is chosen, the buyer must still select his strain or he may be a sorrier man after the purchase than before and blame everything and everyone but himself.

There are outward signs that should be studied carefully to help in the selection of a dairy cow, and, when breeding, these should be constantly the aim of a progressive and constructive herdmaster. I am not prepared to say that other cows, without many of these desirable points of conformation will not produce, but they are more the exception than the rule, and very likely will not reproduce these good qualities so consistently in their offspring.

Each breed has its distinctive type, but all dairy cows have certain guiding lines to help in the selection of producers. Beauty must take a certain place in the classification, or the herds will deteriorate in conformation.

A good dairy cow should embody the following points:—Fine flat bone throughout, fine or flat thighs, wide and level between hips, wide in the thurls, wide pins being as level as possible with the hips, a nice level back, with fine and prominent vertebrae ending in a thin tail nicely and squarely hung at the pins. The neck



C. E. VERCO'S "MELVIN DUCHESS."

Three times Champion, Adelaide Royal Show.

Production Figures—

*Senior 3-year-old—10,021½lbs. milk; 554.90lbs. butterfat; average test, 5.54.
*Senior 4-year-old—11,193lbs. milk; 644.00lbs. butterfat; average test, 5.75.
5-year-old mature—11,469lbs. milk; 589.25lbs. butterfat; average test, 5.14.
*6-year-old mature—13,134lbs. milk; 723.21lbs. butterfat; average test, 5.51.
*Indicates record figures for the Jersey Breed.

should be thin and long, with a neat attachment to the body. The head should be free from all coarseness or bulliness, clean cut, a fair length and wide between bright prominent eyes. The mouth should be wide, the nostrils prominent, whilst the whole head, typical of the breed, should present an appearance of alertness. The cow should also have a deep barrel, nicely sprung ribs with a good sweep. There should be good lung room, but the shoulders want to be fine and ending in neat but prominent withers. The whole body of the cow should be covered with nice, loose, mellow skin, on which fine hair exists.

The udder should hang well up behind, with plenty of soft loose folds, and to ed to the inside of the legs as high up as possible, then with a pleasing period the floor; the udder should run well up forward to give good fore-make a with four nicely-spaced teats hung straight down and of comfortable herd

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size. This class of udder should not sag with work and become pendulous, but hang nicely and snugly between the hind legs, being high up, wide, and long. Do not select a cow with a pendulous udder or one that is badly quartered, especially sideways.

THE CALVES.

The selection and care of calves is a big subject. Always select calves from the best cows which, for production, should have been tested with the Babcock tester. Let the calf suck the dam for the first two days. This insures it getting the beastings, and the cow's udder is helped to settle down better. Of course, all surplus milk must be taken away. The calf should have whole milk for the next week, and then gradually have this replaced with separator milk until in a month the calf is on separated milk only. If a paddock of green clover is available into which the calves can be turned in the daytime, nothing else need be done to ensure good, healthy heifers. Do not fatten Jersey calves, but keep them growing in good store condition until they are about three to five months in calf. After this it does not hurt to let them get nice and fat for calving. Many more calves, especially stud calves, are spoiled by overfeeding than underfeeding.

FEEDING.

Feed the pregnant cow well, and add salt and bonemeal (or superphosphate) to her ration. Bring her in nice and fat, then let her milk the surplus fat off for a few weeks. Bran is the best medicine and concentrate for the first few days. As soon as the cow shows signs of losing too much condition then gradually accustom her to some concentrates (crushed oats and bran, fifty-fifty). Just aim to keep the cow in good working order, the same as a teamster would his horses.

Short greenfeed is the best milk producer, and if it has plenty of super applied to it the cows will milk better and keep in better health. Rotational grazing is the ideal thing. Move the cows to a fresh paddock every few days. Concentrates should only be used to balance the ration, and not to take the place of greenfeed, hay, or ensilage. The education of a child can only develop the mind the child possesses. No amount of advanced education will materially help the indivi-
-l who has not the ability to absorb the information. So with the dairy cow—
ma[illegible]centrated feeding can only develop the milking qualifications; if they
herd.

are not in the strain the feed will be wasted and the system be extravagant. The basis of all milk or butter production is the cow. Be her breed what it may, she must come from a strain of prepotent producers.

In drying off a cow more care should be exercised with the high producer than is sometimes given. There are many methods, but every cow must be taken individually. By improper drying off probably many ills such as mammitis are started. The stale milk should be drawn right out of the udder when the cow is milked, and not the udder just eased up a bit. Bag up the udder, and let it have some pressure to stop the flow of milk, but when milked out strip it properly and get all the stale milk out; do not leave a lot of old milk there to be absorbed as best it can or go bad in the vessel.

A dry cow should be fed well and brought in fat. This may help to foster milk fever in high producers, but it gives the cow a good start for the fresh lactation.

THE HEAD OF THE HERD.

The selection of the bull is one of the most important things for a dairy farmer to give his attention to. Too much care and thought cannot be given to this part of the constructive dairy herd. Every calf dropped carries 50 per cent. of the sire's blood and 25 per cent. of the sire's dam. The same outline that is looked for in the dairy cow should be a guide in a general way for the selection of a bull. Bear in mind that the bull must be masculine in appearance and not feminine. A cow's neck and head on a bull would be out of place, and be just as objectionable as a bull's head and neck on a cow.

Probably the best guide is to study the dam of the bull and, if possible, the dam of his sire. From these two cows will probably come most of the qualities produced in the bull's stock, so far as his 50 per cent. of the calf is concerned. The dam of the bull should certainly be a good type of cow of pure breeding, with a good udder and production. The greatest difficulty in selecting a bull comes when the cows attain to a high standard, be they of a pure breed or even a grade breed. Then one must study type and production, and also be sure to get a sire that will improve the stock and not give offspring of an inferior type or lesser production.

Seeing that it is so difficult to make a decent living out of dairying under present conditions, it will pay every dairyman to breed and keep better cows and feed them better, so that the same profit can be made from the fewer cows and thus leave the extra land that was used by the cows disposed of, for fattening lambs or increasing the income through another avenue.

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(Guaranteed by the Commonwealth Government.)

DEPARTMENT OF AGRICULTURE.

SINGLE TEST EGG-LAYING COMPETITION, 1935-36.

Conducted at Parafield Poultry Station.

LEADING SCORES TO WEEK ENDED 29th SEPTEMBER, 1935.— FIRST GRADE EGGS ONLY.

SECTION 1.—WET MASH.

Class 1.—White Leghorns.

	Eggs Laid.	Bird Nos.
Singles—		
F. J. Buck	124	219
E. McKee	124	27
H. C. Stacy	122	36
Trios—		
E. McKee	346	28–30
E. McKee	320	25–27
W. H. A. Hodgson	311	298–300
Teams—		
E. McKee	666	25–30
W. Sickert	591	169–174
C. R. Wharton	578	127–132

Class No. 2.—Any other Light Breed.

	Eggs Laid.	Bird Nos.
Singles—		
A. Heaysman (Cuckoo Leghorn)	113	323
Langmaid and Bettison (Black Minorca)	90	321

Class No. 3.—Black Orpingtons.

	Eggs Laid.	Bird Nos.
Singles—		
A. G. Dawes	110	327
K. Pennack	107	340
K. Pennack	102	337
Trios—		
H. J. Mills	256	331–333
K. Pennack	221	337–339
A. P. Urlwyn	219	465–467
Teams—		
K. Pennack	439	337–342
H. J. Mills	424	331–336
H. H. Gallagher	382	343–348

Class No. 4.—Any other Heavy Breed.

	Eggs Laid.	Bird Nos.
Singles—		
H. J. Mills (Rhode Island Red)	135.	364
V. F. Gameau (Rhode Island Red)	109	381
V. F. Gameau (Rhode Island Red)	108	380
Trios—		
K. Pennack (Barnevelder)	284	388–390
V. F. Gameau (Rhode Island Red)	257	379–381
H. J. Mills (Rhode Island Reds) (2 birds only competing)	227	364–366
Teams—		
K. Pennack (Barnevelder)	476	385–390
V. F. Gameau (Rhode Island Reds)	439	379–384
A. G. Dawes (Rhode Island Reds)	374	367–372

SECTION 2.—DRY MASH.

Class No. 5.—White Leghorns.

	Eggs Laid.	Bird Nos.
Singles—		
G. R. Cowell	100	391
A. J. Monkhouse	91	402
G. R. Cowell	89	396
Trios—		
A. J. Monkhouse	217	400–402
A. J. Monkhouse	204	397–399
Teams—		
A. J. Monkhouse	421	397–402
G. R. Cowell	373	403–408

Class No. 7.—Black Orpingtons.

Singles—		
W. R. Christie	88	409

Class No. 8.—Any other Heavy Breed.

W. R. Christie	78	412

SECTION 3.—WET MASH.

Singles—		
Eric Pratt, Abattoirs (White Leghorn) ..	114	434
Herbert Oliver, McLaren Vale, Black Orpington)	113	442
Peter Western, Ascot Park (White Leghorn	113	415
Lyol Stone, Morphett Vale (Black Orpington)	112	443
Malcolm Booth, Bridgewater (Black Orpington)	111	445

FEEDING TESTS AT PARAFIELD POULTRY STATION.

[New Series of Tests by C. F. ANDERSON, Government Poultry Expert.]

In continuing the experimental feeding tests at Parafield Poultry Station, a new series of tests commenced on 1st April, 1935. Five tests each of 50 white Leghorn pullets were selected. The pullets were chosen as nearly even in age, type, and maturity as was possible.

In order to gain further information on the various methods of feeding, some of the tests are similar to the series which concluded on 31st March, 1935.

The following are the methods to be adopted, together with the results from 1st April to 30th June.

Feeding Tests commenced on 1st April, 1935.

1. Wet mash, composed of crushed barley and crushed wheat, with greenfeed and meatmeal; 2ozs. wheat per day.
2. Standard bran and pollard mash, with greenfeed and meatmeal; 1½ozs. wheat per day.
3. Bran and crushed wheat mash, with greenfeed and meatmeal; 2ozs. wheat per day.
4. Mash of crushed oats and crushed wheat with greenfeed and meatmeal; wheat, 2ozs. per day.
5. Commencing with a crushed barley and crushed wheat mash, greenfeed, meatmeal and then the feeding to be changed according to the season of the year.

	No. Eggs Laid 1st April, 1935, to 31st July, 1935.	No. Eggs Laid Month of August, 1935.	Total Eggs Laid 1st April, 1935, to 31st August, 1935.
No. 1 Test	1,728	845	2,573
No. 2 Test	1,776	839	2,615
No. 3 Test	1,812	922	2,734
No. 4 Test	1,464	811	2,275
No. 5 Test	1,465	795	2,260

	No. Eggs Laid 1st April, 1935, to 31st August, 1935.	No. Eggs Laid Month of September, 1935.	Total Eggs Laid 1st April, 1935, to 30th September, 1935.
No. 1 Test	2,573	934	3,507
No. 2 Test	2,615	938	3,553
No. 3 Test	2,734	928	3,662
No. 4 Test	2,275	849	3,124
No. 5 Test	2,260	819	3,079

OFFICIAL SINGLE TEST EGG-LAYING COMPETITION, 1935-36.

CONDUCTED AT PARAFIELD POULTRY STATION.

ONLY FIRST GRADE EGGS RECORDED.

SECTION 1.—WET MASH.

Class No. 1.—*White Leghorns.*

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 29th Sept., 1935.	
B. Cooke, Kanmantoo.	1	81	
	2	69	
	3	84	234
	4	90	
	5	106	
	6	105	301
			535
	7	—	
	8	—	
	9	—	—
	10	—	
	11	—	
	12	—	—
			—
A. H. Matthews, Bridgewater	13	102	
	14	—	
	15	119	221
	16	110	
	17	84	
	18	68	262
			483
H. F. Muirson, Yundi.	19	5	
	20	73	
	21	59	137
	22	66	
	23	104	
	24	58	228
			365
E. McKee, 5, Rose Street, Carrondown.	25	79	
	26	117	
	27	124	320
	28	118	
	29	121	
	30	107	346
			666
H. C. Stacy, Meadows.	31	62	
	32	78	
	33	120	260
	34	47	
	35	93	
	36	122	262
			522
T. Cleaver, Bridgewater.	37	40	
	38	60	
	39	75	175
	40	100	
	41	55	
	42	73	228
			403
C. Sandstrom, Yundi.	43	81	
	44	—	
	45	dead	81
	46	58	
	47	55	
	48	107	220
			301
A. J. Monkhouse, Woodside.	49	56	
	50	113	
	51	93	262
	52	112	
	53	58	
	54	82	252
			514
J. F. Smith, Meadows.	55	78	
	56	84	
	57	7	169
	58	56	
	59	4	
	60	101	161
			330
A. Young, Bridgewater.	61	102	
	62	89	
	63	85	276
	64	53	
	65	108	
	66	82	243
			519
R. W. McAlister, Yundi.	67	53	
	68	77	
	69	95	225
	70	57	
	71	43	
	72	82	182
			407
T. Duhring, Mallala.	73	109	
	74	78	
	75	64	251
	76	50	
	77	64	
	78	74	188
			439
R. J. Underdown, Meadows.	79	41	
	80	53	
	81	108	202
	82	74	
	83	70	
	84	100	244
			446
S. Hill, Bridgewater.	85	62	
	86	102	
	87	92	256
	88	98	
	89	105	
	90	83	286
			542
W. R. Hedger, Yundi.	91	53	
	92	66	
	93	71	190
	94	75	
	95	50	
	96	73	198
			388

EGG-LAYING COMPETITION—*Continued.*

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 29th Sept., 1935.	
Langmaid & Bettison, Salisbury.	97	53	
	98	50	
	99	54	157
	100	92	
	101	45	
	102	—	137
			294
E. Portlock, Meadows.	103	114	
	104	88	
	105	93	295
	106	77	
	107	63	
	108	95	235
			530
Murray Powell, Jupiter Creek.	109	110	
	110	30	
	111	93	233
	112	67	
	113	119	
	114	36	222
			455
G. W. Bignell, Meadows.	115	97	
	116	69	
	117	69	235
	118	67	
	119	98	
	120	100	265
			500
W. M. Field, Yundi.	121	82	
	122	26	
	123	67	175
	124	44	
	125	65	
	126	98	207
			382
C. R. Wharton, Meadows.	127	86	
	128	96	
	129	105	287
	130	108	
	131	91	
	132	92	291
			578
H. H. Hefford, Murray Bridge.	133	74	
	134	105	
	135	87	266
	136	41	
	137	110	
	138	67	218
			484
F. W. Gage, Meadows.	139	75	
	140	4	
	141	dead	79
	142	93	
	143	62	
	144	60	215
			294
W. H. L. Norman, Echunga.	145	77	
	146	57	
	147	—	134
	148	111	
	149	74	
	150	47	232
			366
B. R. Whittington, Yundi.	151	97	
	152	46	
	153	70	213
	154	95	
	155	89	
	156	63	247
			460
B. C. Sanders, Meadows.	157	95	
	158	105	
	159	107	307
	160	92	
	161	31	
	162	dead	123
			430
H. H. Gallagher, Pooraka.	163	32	
	164	78	
	165	83	193
	166	59	
	167	40	
	168	93	192
			385
W. Sickert, Meadows.	169	114	
	170	72	
	171	107	293
	172	80	
	173	104	
	174	114	298
			591
W. Restall, Echunga.	175	40	
	176	—	
	177	63	103
	178	92	
	179	78	
	180	92	262
			365
A. G. Dawes, 230, Portrush Road, Glenunga.	181	100	
	182	75	
	183	69	244
	184	49	
	185	60	
	186	102	211
			455
G. W. Sykes, Yundi.	187	92	
	188	52	
	189	47	191
	190	63	
	191	61	
	192	97	221
			412
R. Bartley, Meadows.	193	70	
	194	111	
	195	87	268
	196	62	
	197	83	
	198	97	242
			510
A. & H. Gurr, Mindaroo Poultry Farm, Bradbury.	199	61	
	200	72	
	201	63	196
	202	88	
	203	58	
	204	64	210
			406

EGG-LAYING COMPETITION—*Continued.*

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 29th Sept., 1935.	
J. J. Devlin, Meadows.	205	94	
	206	85	
	207	117	296
	208	88	
	209	63	
	210	114	265
			561
D. J. Foxwell, Echunga.	211	96	
	212	65	
	213	31	192
	214	14	
	215	81	
	216	26	121
			313
F. J. Buck, Meadows.	217	86	
	218	92	
	219	124	302
	220	76	
	221	79	
	222	71	226
			528
J. A. Grist, Yundi.	223	18	
	224	33	
	225	64	115
	226	25	
	227	—	
	228	73	98
			213
L. A. King, Meadows.	229	103	
	230	93	
	231	dead	196
	232	4	
	233	72	
	234	19	95
			291
R. W. Sando, Echunga.	235	80	
	236	60	
	237	64	204
	238	78	
	239	69	
	240	59	206
			410
E. W. Young, Meadows.	241	103	
	242	87	
	243	80	270
	244	85	
	245	—	
	246	40	125
			395
A. Jarvis, Yundi.	247	91	
	248	51	
	249	59	201
	250	87	
	251	65	
	252	115	267
			468
	253	2	
	254	3	
	255	—	5
	256	2	
	257	3	
	258	2	7
			12
S. Bridge, Yundi.	259	84	
	260	100	
	261	82	266
	262	44	
	263	87	
	264	70	201
			467
H. G. Egarr, Meadows.	265	83	
	266	79	
	267	25	187
	268	18	
	269	90	
	270	40	148
			335
R. H. Smith, Yundi.	271	93	
	272	57	
	273	86	236
	274	107	
	275	39	
	276	89	235
			471
J. M. Lawson, Meadows.	277	98	
	278	98	
	279	74	270
	280	59	
	281	96	
	282	58	213
			483
J. O. Marshall, Yundi.	283	12	
	284	81	
	285	88	181
	286	102	
	287	93	
	288	62	257
			438
G. Joyce, Meadows.	289	13	
	290	121	
	291	60	194
	292	78	
	293	102	
	294	73	253
			447
J. A. Bradtke, Yongala.	295	11	
	296	—	
	297	78	
		89	
W. H. A. Hodgson, Salisbury.	298	114	
	299	96	
	300	101	
		311	
A. W. McDonald, Gawler.	301	47	
	302	76	
	303	83	
		206	
J. H. Dowling, Glossop.	304	70	
	305	105	
	306	21	
		196	

EGG-LAYING COMPETITION—*Continued.*

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 29th Sept., 1935.	
A. P. Urlwin, Balaklava.	307	80	
	308	64	
	309	9	
		153	
L. S. Ekers, Mount Compass.	310	88	
	311	20	
	312	101	
		209	
V. E. Williams, Semaphore Park.	313	96	
	314	99	
	315	99	
		294	
F. P. Munzberg, Tanunda.	316	98	
	317	86	
	318	99	
		283	
Total Class 1		22,330	
Class 2—Any Other Light Breed.			
Langmaid & Bettison, Salisbury. (Black Minorcas.)	319	70	
	320	58	
	321	90	
		218	
A. Heaysman, Government Road, Eden Hills. (Cuckoo Leghorns.)	322	77	
	323	113	
	324	42	
		232	
Total Class No. 2.		450	
Class No. 3—Black Orpingtons.			
A. G. Dawes, 230, Portrush Road, Glenunga.	325	43	
	326	22	
	327	110	175
	328	55	
	329	65	
	330	74	194
			369
H. J. Mills, 108, Edward Street, Edwardstown.	331	99	
	332	82	
	333	75	256
	334	71	
	335	97	
	336	dead	168
			424
K. Pennack, Pooraka.	337	102	
	338	84	
	339	35	221
	340	107	
	341	52	
	342	59	218
			439
E. H. Gallagher, Pooraka.	343	83	
	344	57	
	345	68	208
	346	86	
	347	64	
	348	24	174
			382

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 29th Sept., 1935.	
B. Cooke, Kanmantoo.	349	20	
	350	32	
	351	25	
		77	
H. H. Hefford, Murray Bridge.	352	88	
	353	51	
	354	43	
		182	
J. H. Dowling, Glossop.	355	56	
	356	27	
	357	87	
		170	
L. S. Ekers, Mount Compass.	358	69	
	359	49	
	360	86	
		204	
A. G. Dawes, 230, Portrush Road, Glenunga.	452	41	
	453	69	
	454	67	177
	455	5	
	456	86	
	457	77	168
			345
A. P. Urlwin, Balaklava.	465	62	
	466	85	
	467	72	
		219	
Total Class No. 3		2,811	
Class No. 4.—Any Other Heavy Breed.			
H. J. Mills, 108, Edward Street, Edwardstown. (Rhode Island Reds.)	361	1	
	362	dead	
	363	52	53
	364	135	
	365	92	
	366	dead	227
			280
A. G. Dawes, 230, Portrush Road, Glenunga. (Rhode Island Reds.)	367	54	
	368	70	
	369	49	173
	370	81	
	371	58	
	372	62	201
			374
F. F. Welford, 1, Ludgate Circus, Colonel Light Gardens. (Rhode Island Reds.)	372	80	
	374	98	
	375	dead	178
	376	16	
	377	67	
	378	66	149
			327
V. F. Gameau, Findon Road, Woodville. (Rhode Island Reds.)	379	40	
	380	108	
	381	109	257
	382	87	
	383	19	
	384	76	182
			439

EGG-LAYING COMPETITION—*Continued.*

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 29th Sept., 1935.	
K. Pennack, Pooraka. (Barnevelders.)	385	74	
	386	66	
	387	52	192
	388	96	
	389	84	
	390	104	284
			476
A. G. Dawes, 230, Portrush Road, Glenunga. (Rhode Island Reds.)	458	10	
	459	70	
	460	91	171
	461	15	
	462	70	
	463	75	160
			331
Total Class No. 4			1,947

SECTION 2.—DRY MASH.

Class No. 5.—White Leghorns.

Competitor.	Bird No.	First Grade Eggs.	
G. R. Cowell, Balhannah.	391	100	
	392	41	
	393	26	167
	394	50	
	395	33	
	396	89	172
			339
A. J. Monkhouse, Woodside.	397	38	
	398	86	
	399	80	204
	400	54	
	401	72	
	402	91	217
			421
G. R. Cowell, Balhannah.	403	83	
	404	75	
	405	40	198
	406	69	
	407	52	
	408	54	175
			373
Total Class No. 5			1,133

Class No. 7.—Black Orpingtons.

Competitor.	Bird No.	First Grade Eggs.
W. R. Christie, Upper Mitcham.	409	88
	410	54
	411	71
		213
Total Class No. 7		213

Class No. 8.—Any Other Heavy Breed.

Competitor.	Bird No.	First Grade Eggs.
W. R. Christie, Upper Mitcham. (Rhode Island Reds.)	412	78
	413	33
	414	71
		182
Total Class No. 8		182

SECTION 3.—WET MASH.

Home Project Utility Section.—Any Breed.

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 29th Sept., 1935.
..ter Western, ..cot Park School. ..ite Leghorn.)	415	113
..stern, ..rk School. ..horn.)	416	103
William Sando, Echunga School. (White Leghorn.)	417	85
Douglas Marshall, Yundi School. (White Leghorn.)	418	89
Norman Page, Murray Bridge School. (White Leghorn.)	419	84
Kelvyn & Brian Nicholls, Finniss School. (White Leghorn.)	420	80
Dean Colwell, Grange School (White Leghorn.)	421	71
Warren Hannaford, Paracombe School (White Leghorn.)	422	108
W. Horne, Woodville School. (White Leghorn.)	423	dead
Owen Robinson, Ascot Park School. (White Leghorn.)	424	107
June Chapman, Woodchester School. (White Leghorn.)	425	64
Rosa Hunt, Morphett Vale School. (White Leghorn.)	426	73
Jack O'Sullivan, Morphett Vale School. (White Leghorn.)	427	95
Peter Taylor, Morphett Vale School. (White Leghorn.)	428	51
James Taylor, Morphett Vale School. (White Leghorn.)	429	84
William Gregory, Victor Harbour School. (White Leghorn.)	430	66
Ian Bruce, McLaren Flat School. (White Leghorn.)	431	60
Clifford Burford, Smithfield School. (White Leghorn.)	432	44
Tom Callaghan, Smithfield School. (White Leghorn.)	433	13
Eric Pratt, Abattoirs School. (White Leghorn.)	434	114
Stanley Pratt, Abattoirs School. (White Leghorn.)	435	97
Alan Yelland, Cunliffe School. (Minorca.)	436	63
Gordon Gallasch, Gilles Plains School. (White Leghorn.)	437	88

EGG-LAYING COMPETITION—*Continued.*

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 29th Sept., 1935.
Clarence King, Tarlee School. (White Leghorn.)	438	41
Olive Pitman, Gilles Plains School. (Black Orpington.)	439	100
Donald Heading, Sturt School. (Black Orpington.)	440	100
Clive Steer, Sturt School. (Black Orpington.)	441	88
Herbert Oliver, McLaren Vale School. (Black Orpington.)	442	113
Lyol Stone, Morphett Vale School. (Black Orpington.)	443	112
Ray Candy, Noarlunga School. (Black Orpington.)	444	49
Malcolm Booth, Bridgewater School. (Black Orpington.)	445	111
Murray Heneker and Frank Short, Hamley Bridge School. (Black Orpington.)	446	87
Peter Boucaut, Seaton Park School. (Rhode Island Red.)	447	23
Peter Preece, Gilles Plains School. (Rhode Island Red.)	448	63
Cliff Crosser, Wellington Road School. (White Leghorn.)	449	109
John Keldoulis, Orroroo School. (Black Orpington.)	450	87
Bruce Dooland, Thebarton School. (Black Orpington.)	451	56
Alan Yelland, Cunliffe School. (Rhode Island Red.)	464	41
Total		2,932

Diabolo Separator Coy (S.A.) Ltd.

117-119 CURRIE STREET,

ADELAIDE.

AGRICULTURE IN THE TEMPERATE AND SUB-TROPICAL CLIMATES OF THE SOUTH.

[A Report by the Deputy Director of Agriculture (W. J. Spafford) to His Excellency Sir Winston Dugan, K.C.M.G., C.B., D.S.O., Governor in and over the State of South Australia and its Dependencies in the Commonwealth of Australia. Mr. Spafford took a brief tour of portions of the principal agricultural countries in the same climatic zones as the settled portions of Australia, in fulfilment of the appointment as Honorary Commissioner, conferred upon him by His Excellency, to inquire into and report upon the Production and Preparation for Marketing of Agricultural Products, including Crops and Livestock in South America, South Africa, and New Zealand.]*

(Continued from page 233.)

ARGENTINA.

Argentina is one of the most important agricultural countries of the world, and is located in the same climatic zone as is Australia, but it has a very great advantage over the latter country in that it is so much closer to the principal markets for primary rural products that Europe can be reached in just half the time.

THE COUNTRY OF ARGENTINA.

Argentina is a very large agricultural country, lacking coal and iron, and contains about 690,000,000 acres of land, and if Uruguay and the Province of Rio Grande do Sul of Brazil had belonged to the country it would have been almost triangular in shape, with the Andes mountains running nearly directly north and south as the western side of the triangle. As it is, the top end of Argentina for a distance of about 1,000 miles is roughly rectangular, the width near the north being about 970 miles, and at a line running east and west just below La Plata, nearly 800 miles. Near this line the coastline turns almost due west for about 270 miles, leaving the width of the country something approaching 500 miles, and with a very irregular coastline is more or less gradually narrowed until it becomes about 140 miles in width at the southern boundary of the Territory of Santa Cruz.

Besides this area, which is bounded by Chile on the west and south, Bolivia on the north, Paraguay, Southern Brazil, and Uruguay on the north-east and the Atlantic Ocean on the east, Argentina also possesses about half of the Island of Tierra del Fuego, which she shares with Chile, and which is separated from the mainland by the Straits of Magellan.

The rivers in the northern portions of Argentina are very important even now, but some day will be even more so, both from an irrigation and a navigation point of view. The River Plate, which is so well known because Buenos Aires, the capital of Argentina, is built on one of its banks, is hardly a river in the true sense of the word, but is rather an estuary formed by the Rivers Paraná and Uruguay, and is only about 100 miles in length, and varies between 23 and 56 miles in width. The Paraná is one of the big rivers of the world, and besides the last 700 miles or so of its course being in Argentina, another 400 miles or so forms the northern boundary of the Province of Corrientes, and the Territory of Misiones and it then continues in a north-easterly direction into Brazil to its source, some hundreds of miles away. This river is navigable for steamers throughout the

*Tour made in the company of Col. C. P. Butler ("Yattalunga," of the *Advertiser* and the *Chronicle*.)

[Enlargement by Government Photolithographer.

A Raised Map of South America, showing Mountains, Valleys, and Principal Rivers. Within the Boundaries of Argentina are shown the 24-inch, 16-inch, and 6-inch rainfall isohyets. Nearly all of the Great Plain of Argentina is located between the 24-inch rainfall isohyet and the Parana River.

portion in Argentina, and as it is located on the edge of an enormous fertile plain, and is always of muddy appearance, because of the silt it carries, must be important for irrigation purposes some day. The full length of the Paraná is stated to be 2,800 miles. The Uruguay River, which is usually taken to be 940 miles in length, is a wide stream as well, and forms the boundary between Argentina and Uruguay, and continues on into Brazil in a north-easterly direction to its source in the mountains. The Uruguay is navigable for steamers for hundreds of miles above its junction with the Paraná.

There are no rivers of importance in the extensive plains in the centre of Argentina, but to the south there are about a dozen or so very useful streams which reach the Atlantic Ocean from the Andes, some of the largest being the Colorado, Negro, Chubut, Chico, and Santa Cruz. Besides the important rivers there are countless streams with their sources in the Andes which flow into Argentina, but with insufficient volume to make separate tracks to the Atlantic. Some few of these small streams have been harnessed for irrigation purposes, and it appears certain that this form of agriculture can be extended enormously.

Although Argentina has very great areas of plain lands, quite an appreciable proportion of the country is mountainous, and other areas are hilly. The mighty Andes extend north and south for the whole length of the country, and as the highest peak of this range in Argentina reaches to 23,380 feet (Aconcagua), and several others are above 16,000 feet, it is inevitable that a considerable extent of country along the western side of the Republic is mountainous, and so almost useless for agriculture. On the other hand, the presence of this very high range affects the climate, and in this case has a most beneficial effect on the rainfall and its distribution in so far as Argentina is concerned. Further, so many of the peaks are permanently snow-capped that an unfailing periodic supply of water for irrigation flows from these mountains down to the level lands below.

There is a distinct mass of hills near Córdoba, which covers a relatively small area between the big plain and the Andes; the Territory of Misiones is all mountainous, and comprises the southerly end of a Brazilian range; whilst practically all of the country south of the Province of Buenos Aires is decidedly hilly.

THE IMMENSE AGRICULTURAL PLAIN OF ARGENTINA.

The tremendous extent of plain country in Argentina makes a strong impression on all visiting agriculturists, and the immensity of the principal plain is staggering, and must be seen to be realised. It is easy to say that commencing near the southern end of the Province of Buenos Aires, an apparently level plain continues almost due north to the boundary of the country, which is distant about 1,200 miles, and for most of its length is about 400 miles wide, with one place near the middle where it is constricted for a short distance to about 200 miles in width. Bounded on the east by the Atlantic Ocean for part way, and then by the Paraná River, and on the west by hills, the plain includes all of the Provinces of Buenos Aires and Santa Fé and the Territories of the Chaco and Formosa, about half of the Province of Salta, most of the Provinces of Santiago del Estero and Córdoba, and some of the Province of San Luis and of the Territory of La Pampa. The only breaks of consequence in this great plain are two low ranges of hills jutting into it in the Province of Buenos Aires, one near Bahia Blanca and the other starting at the coast near Mar del Plata.

Although these figures might give some sort of an idea of the size of the plain, its vast extent can only be realised by travelling over it in different directions for days at a time, when it appears somewhat like being at sea in calm weather, with the unbroken horizon in all directions. The only relief to the eye is given by trees—mainly Eucalypts—planted around homesteads, and as in many cases the

estancias are large, and so homesteads far apart, these breaks are sometimes truly infrequent. There are only few rivers and creeks in the plain, so bridges and culverts are not plentiful, and naturally, because of the lack of hills, trees, and watercourses, the country is monotonous to anyone not keenly interested in agriculture. To an agriculturist, however, it is extremely attractive, because it is such highly productive country that the growth of plants is most prolific, whether they be crops, pastures, trees, or weeds. The statement is sometimes made that a man could start with a plough from Buenos Aires and strike a furrow for a distance of 600 miles without being hindered by a stone or a tree, and this is almost literally correct, for the plain is stoneless and on much of it the largest plant growing naturally is the Pampas Grass.

This immense plain is probably the greatest and most important strip of agricultural country in the world, at all events in temperate and mild sub-tropical climates, for not only does it present no physical difficulties to agricultural operations, but it has all that is desired for the promotion of prolific growth of plants. The soils are deep, chocolate-coloured silts of such free-working texture that the implements shine when pulled through them, and at the same time have good natural drainage and high moisture-holding powers. The rainfall received over most of the plain is at least 24 inches per annum on the average, and up to 48 inches, and is so well distributed that just about 30 per cent. of the rain falls in each of the seasons of spring, summer, and autumn, with only about 10 per cent. in winter. Temperatures are fairly high in summer, and rarely low in the winter, so favouring long-period growth. Good underground water is plentiful at relatively shallow depths.

Very heavy production of beef, wheat, maize, and linseed, as well as smaller quantities of most other agricultural products, now come from this strip of country, although so much of it is occupied as large holdings, and its potentialities are simply amazing, even without using any of the water flowing into it and on its outskirts for irrigation purposes.

CLIMATE OF ARGENTINA.

There are few other countries in the world occupied by the one people and controlled by the one Government which are so favourably situated as is Argentina, in so far as climate is concerned. The most northerly point of the Province of Jujuy is about 130 miles into the tropics above the Tropic of Capricorn, whilst the southern extremity is in Antarctic conditions, at something just below latitude 55deg. S. At the same time, the country has the benefit of about 1,600 miles of coastline in the Atlantic, and of the very high mountain range—the Andes—extending the whole length of the country.

Nearly two-thirds of the country receives more than 20 inches of average annual rainfall, about one-sixth receives between 20 inches and 8 inches, and the remainder, a long narrow strip which runs down from the top of the country along the foothills of the Andes to a point somewhere near the Colorado River, then broadens out towards the Atlantic coast, extending from near the mouth of the Rio Negro to the most southerly point of the mainland of Argentina, gets less than [illegible] inches of rain per annum, on the average.

Not only is an enormous area of this country well provided with rain, but its distribution in most localities is almost ideal, as can be seen by a glance at the following table, setting out the average annual rainfall over a period of 15 years, for at least one recording station in each Province or Territory of the Republic where records are taken, and in this table can also be seen the incidence of the rainfall in the four seasons of the year.

Argentina.—Distribution of the Rainfall (15-year Average).

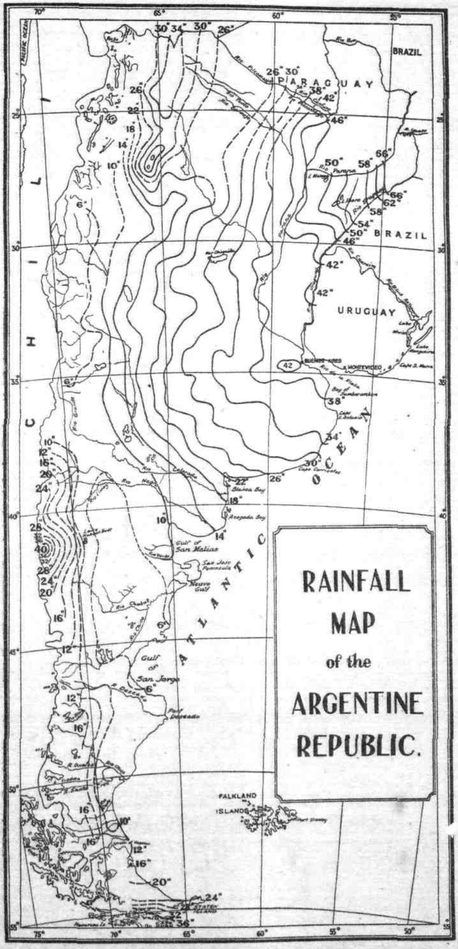
Recording Station.		Classification According to Rainfall.	Average Annual Rainfall.	Percentage Distribution Each Season.			
Province or Territory.	Recording Station.			Winter, June to Aug.	Spring, Sept. to Nov.	Summer Dec. to Feb.	Autumn Mar. to May.
		Ins.	Ins.	%	%	%	%
T. of Misiones	Posadas	Above	58·77	18·4	26·9	25·3	29·4
P. of Corrientes	Corrientes	40	49·45	10·3	25·5	29·2	35·0
T. of Formosa	Formosa	"	48·33	10·8	26·8	30·6	31·8
P. of Entre Rios	Villaguay	"	40·74	14·7	27·2	25·7	32·4
Federal Capital	Buenos Aires	Between	39·89	17·5	26·2	26·8	29·5
T. of the Chaco	La Sabana	25 and	39·38	6·9	26·6	33·6	32·9
P. of Buenos Aires	Carlos Tijedor	40	38·03	11·3	26·1	33·7	28·9
P. of Tucuman	Tucuman	"	37·52	4·1	17·8	52·5	25·6
P. of Santa Fé	Santa Fé	"	36·46	11·4	22·7	34·3	31·6
P. of Buenos Aires	Olavarria	"	32·13	14·3	26·7	29·1	29·9
P. of Salta	Salta	"	30·80	1·4	12·4	65·6	20·6
P. of Jujuy	Jujuy	"	29·81	1·6	13·1	60·9	24·4
P. of Córdoba	Córdoba	"	28·61	5·3	22·5	46·9	25·3
T. of La Pampa	Santa Rosa	"	26·57	9·8	33·2	34·6	22·4
P. of San Luis	San Luis	"	25·96	5·8	20·8	51·1	22·3
P. of Santiago del Estero	Santiago del Estero	Between 16 and 25	21·54	4·7	18·6	53·6	23·1
P. of La Rioja	La Rioja	Between	14·02	3·3	16·0	59·6	21·1
P. of Catamarca	Catamarca	12 and 16	13·58	4·7	16·8	58·3	20·2
T. of Rio Negro	Conesa	Below	9·40	14·3	32·5	28·8	24·4
P. of Mendoza	Mendoza	12	8·04	9·0	23·8	44·1	23·1
T. of Néuquen	Néuquen	"	5·56	29·1	29·2	16·3	25·4
T. of Chubut	Colonia Sarmiento	"	5·52	36·4	19·5	13·9	30·2
P. of San Juan	San Juan	"	3·35	7·2	8·8	65·8	18·2
G. of Misiones	Colonia Findlandesa	Highest average	67·16	21·0	26·7	22·5	29·8
P. of San Juan	Pocito	Lowest average	2·52	11·3	19·4	49·6	19·7

As can be seen from the above figures, the distribution of the rainfall of all places receiving more than 25 inches of average annual rainfall, except Tucuman, Salta, and Jujuy—all of which are near the tropics—is almost ideal for promoting luxuriant growth, because for the three seasons, spring, summer, and autumn, the falls are about equal, and during the cool weather of winter, when less is needed, the falls are lighter.

The only part of the country where the proportion of winter rainfall is high is in the southern districts, but there the total yearly falls are so low that it is not very important. The total area receiving less than 12 inches of average annual rainfall is quite considerable, probably 100,000,000 acres or so, but this is not at all serious in a country like Argentina, because ample irrigation water is available, when controlled, to convert quite a. lot of this poor agricultural country into gardens and high-producing farms at some time in the future.

TEMPERATURES IN ARGENTINA.

From an agricultural point of view the temperatures recorded in those parts of Argentina utilised for crops and livestock are very favourable indeed. In the northern provinces the temperature sometimes goes a good deal above 100° Fahr. in the shade in the summer, but away from the mountains really low temperatures are never experienced in the winter. In the central districts, where there is so



Rainfall Map of the Argentine Republic. The rainfall isohyet for every 4 inches of average annual rainfall is shown, commencing from the 6-inch rainfall isohyet.

much good land, and well-distributed fairly heavy rainfall, the summer temperature sometimes passes 100° Fahr. in the shade, but as a rule the heat is not nearly so great, and as the humidity of the atmosphere is fairly high, the losses of moisture from soils and plants are not excessive, nevertheless the humidity of this zone is not such as to be unbearable, nor even very unpleasant for human beings. In the winter the temperature may fall a few degrees below freezing point for some distance north of Buenos Aires up the plain country, but this is only likely for a short period of time, and the atmosphere warms up on the approach of spring. The low-rainfall districts of the south get some hot weather in the summer, but on the whole are relatively cool, whilst in the winter, although the exposed parts are bleak and cold, the climate is quite mild enough for the healthy development of sheep. In the Andes a hot day is occasionally experienced, but for the most of the year it is extremely cold and only mild during the summer months.

THE ECONOMIC UTILISATION OF THE LAND.

The official estimate of how suitable the land of Argentina is for agricultural purposes and how it is being used at present is somewhat as follows:—

Suitability of all Lands in Argentina.

Land.	Area.	Percentage.
	Acres.	Per Cent.
Adapted for cereals	197,892,000	28.68
Adapted for crops and livestock	269,583,000	39.07
Occupied by forests and woods	123,648,000	17.92
Unsuitable for livestock	98,877,000	14.33
Total land in Argentina	690,000,000	100.00

Utilisation of Argentina's Lands.

How Used.	Area.	Percentage.
	Acres.	Per Cent.
Under cultivation	74,175,000	10.75
Grazed by livestock	306,636,000	44.44
Forests and woods	123,648,000	17.92
Desert, towns, mountains, lakes, and rivers ..	185,541,000	26.89
Total land in Argentina	690,000,000	100.00

SOILS OF THE AGRICULTURAL DISTRICTS OF ARGENTINA.

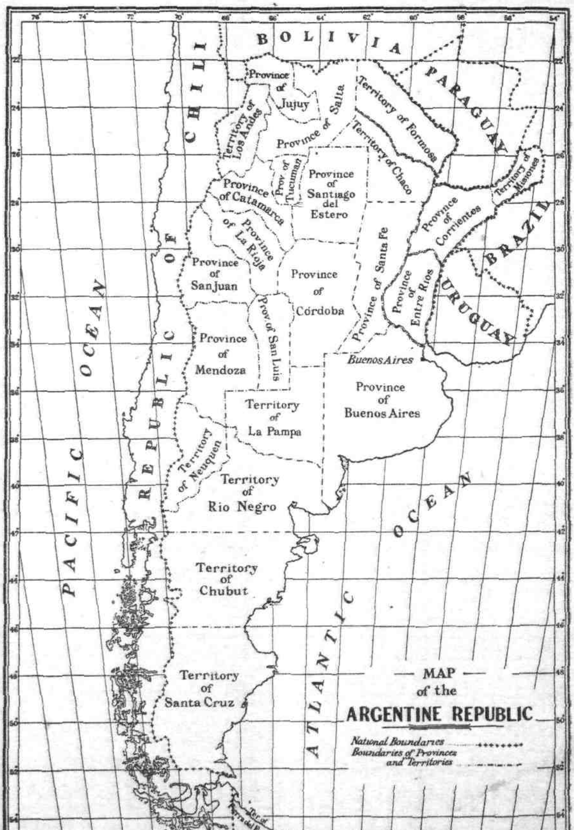
One of the main reasons why the potentialities of Argentina are so great is because of the high fertility of most of the soils to be found in her very extensive agricultural districts. The great bulk of those on the Great Plain appear to be sedimentary soils formed from disintegrated rocks of the Andes or of the Brazilian mountains. On the plains the soils are silty loams and sufficiently coarse in texture to admit all steady rains to soak into them and to lead to the polishing

of the parts of implements which are dragged through them. The colour of the soils is that dark-chocolate which generally denotes very high fertility, and in most places the dark-coloured soil extends from one foot to two feet or more in depth before there is a change of colour. Although there are no stones on the plain the subsoils are sufficiently porous to permit of the full growth of lucerne and to absorb the rain so that few creeks and no large rivers occur on the plain despite the high average rainfall. Also of great importance is the fact that the soils are very regular in nature, it being possible to go for miles and miles without *being able to distinguish* any great differences of colour or texture, and as a consequence crops of all kinds grow to a regular height, and patchiness of growth is not usual. The undulating country on the edge of the Great Plain to the north of Buenos Aires possesses soils of slightly heavier texture and darker colour than out on the plain, but they are still fairly free-working loams and have very high fertility. On the side of the Great Plain closest to the Andes, where the rainfall is so low that irrigation is necessary, the soils contain much more lime and are of a loose open nature, in many cases resting on gravels, and so are admirably suited to irrigation because their natural drainage is so good. This applies equally to the strips of country contiguous to the rivers flowing from the Andes to the sea in the country south of Buenos Aires. In and near the low-rainfall zone the soils are well supplied with lime and in many cases are essentially calcareous soils. All of them are fairly loose and open loams, as is usual with this class of country.

THE AGRICULTURE OF ARGENTINA.

The agricultural production of Argentina, with a population of about 12,000,000 people only, is very high indeed, but the very wonderful natural conditions which exist account for the quantity of primary rural products raised, still it is rather surprising that a country with such a long history, and such outstandingly good natural conditions, has such a relatively small population. On the other hand, some hundreds of years of fighting were not conducive to agricultural progress, nor the building up of a big population, but a wave of rapid development has commenced, and should lead to progressive growth because the people are largely of European origin. It is estimated that about 73 per cent. of the population are Argentine-born of full European parentage, mainly Spanish; about 23 per cent. are foreign-born and generally of European parentage, and the residue are of mixed and inferior blood.

That the progress of the country was considerably delayed will be realised when it is remembered that a Spanish mariner, Juan Diaz de Solis entered the River Plate early in 1516, and after travelling up the river for 115 miles, landed to take possession of the country for Spain. After several other expeditions had visited the country, Don Pedro de Mendoza was appointed the first Adelantado of the country, *i.e.*, "a military leader who defrays the cost of an expedition, and governs and administers the territories he may acquire," in the year 1535, and in January, 1536, reached the River Plate with eleven ships and about 2,000 troops, and started the settlement which was eventually to grow into the city of Buenos Aires. The fighting of native Indians, and the search for metals and wealth which could be transferred to Spain, went on for some very long time, until the people began to desire, and then to fight for, their independence from Spanish control, and just before the River Plate, now Argentina, officially declared its independence, Carlos de Alvear, the Director of the River Plate, tried to persuade Great Britain, through the British Ambassador at Rio de Janeiro (Lord Strangford), for the assumption by England of a Protectorate over River Plate. This was declined because England had no desire to endanger her good relations with Spain. Had it been accepted, recent English and Argentinian history would have been, in all probability, much different. Although the formal Declaration of Independence



Map of Argentina, showing location and boundaries of the Provinces and Territories into which the country is divided.

was passed at Tucuman on 9th July, 1816, and the Federal Constitution drawn up in 1853, the fighting and revolutions continued, and close co-operation could not be brought about until 1880, when Buenos Aires was chosen as the National Capital, and comparative peace has remained the order of the day. The growth of the population of the Capital City—Buenos Aires—gives some idea of the rapidity of the development of the country, for it is estimated that in 1880 this city had a population of 300,000 persons, whereas at present, 1935, it is over two and a quarter millions.

All through this long struggle to make a nation of Argentinians, foodstuffs were being produced for the residents, and so some of the land close to the older cities must have been cropped for hundreds of years, although at present there are few indications of such long-period cropping. Other than the evidence of old buildings the countryside looks as though it was settled in recent times, and the agricultural production is so high that the impression of "new" country with high potentialities is also gained.

That the agricultural production is really high is easily realised by a glance at the following tables, setting out the most recent official figures of the yields and exports of crops and livestock for Argentina:—

AGRICULTURAL PRODUCTION IN ARGENTINA.

¶ *Principal Crops in* 1933-34.

Crop.	Area Sown.	Production.	Exported, 1934.
	Acres.	Tons.	Tons.
Wheat	19,654,531	7,663,965	4,718,006
Maize	16,089,580	5,807,762	5,364,675
Linseed	6,850,619	1,564,878	1,352,741
Oats	3,564,951	819,839	497,878
Barley	1,781,784	771,613	527,623
Rye	1,767,334	233,255	104,028
Canary seed	116,954	35,431	25,309
Vineyards	386,901*	—	—
Wine	—	172,458,000 gallons.*	Importer
Grapes	—	—	6,674
Cotton	342,095*	31,997	26,683
Peanuts	221,287	102,258	603
Rice	47,202	32,981	Importer
Potatoes	392,183	904,781	30,913
Yerba Maté	111,066*	50,238	Importer
Sunflower seed	—	—	9,759
Rape seed	—	—	4,095
Sugar (cane)	386,365*	313,872	,685
Tobacco	29,847	9,956	Importer
Lucerne	13,353,907	—	3,812§
Wheat flour	—	1,318,863	108,670

* 1932-33. § Seed.

¶ "Boletin Mensual de Estadistica Agropecuaria"—January, 1935.

Note.—In translating the table into English the figures used were:—hectarea = 2.47 acres, and "tonelada = 0.9842 ton.

Principal Livestock Products in 1933 and 1934.†

Livestock and Products.	1930 Census.	1933, Slaughterings. Home Consumption.	1933, Slaughterings. Export, 1933.	Export, 1934.
	No.	No.	No.	
Cattle	32,211,855	3,984,851	1,718,142	—
Sheep	44,413,221	2,927,056	4,100,988	—
Pigs	3,768,738	931,080	311,305	—
Horses	9,858,111	—	—	—
Goats	5,647,396	—	—	—
Asses and Mules	1,039,420	—	—	—
		Production, 1933.	Tons.	Tons.
Wool—				
Greasy	—	Tons.	142,145	96,021
Washed	—	162,393	not shown	13,254
Butter	—	32,077	13,690	8,191
Cheese	—	22,983	—	1,473
Casein	—	21,298	—	20,011
				Doz.
Eggs	—	—	—	1,870,317
Beef—				Tons.
Chilled	—	—	344,514	344,120
Frozen	—	—	31,051	31,095
Sheep—				
Frozen	—	—	61,183	47,826
Chilled	—	—	—	165
Pork, Frozen	—	—	—	14,823
Conserved Meat	—	—	54,126	60,090
Salted Meat	—	—	—	6,856
Meat Powder	—	—	—	12,431
Meat Extract	—	—	24,813	1,506
Small-Goods (Meat, Frozen)	—	—	—	23,899
Tallow and Melted Fat	—	—	71,131	60,647
Dried Blood	—	—	—	10,767
Hides—				
Salted	—	—	110,485	103,576
Dried	—	—	16,098	18,629
Sheep Skins	—	—	20,408	16,870
Bones	—	—	—	41,923
Hair and Bristles	—	—	—	3,912

† "Boletin Mensual de Estadistica Agropecuaria"—January, 1935.

Note.—In translating the table into English a tonelada was taken as 0.9842 ton.

THE PRINCIPAL CROPS PRODUCED IN ARGENTINA.

There are no crops of real importance to the world, except a few which must be produced near the Equator, that cannot be grown really well in Argentina, and most of them are being produced now in the country, but at the present time those f outstanding importance are Wheat, Maize, Linseed, and Grapes for Wine, with tton, Peanuts, Canary Seed and Yerba Maté rapidly coming into prominence.

'e preceding table, dealing with crops, shows very clearly how important some se crops are, but naturally figures cannot show how important any, or all of 'e likely to become in the future, and without doubt all can be multiplied most unbelievable extent in this country as the population grows, or as requirements expand.

Ma]

WHEAT IN ARGENTINA.

ıtina is one of the most important of the wheat-producing countries of the being in seventh position as a producer, averaging of late years something

over 200,000,000 bushels per year, and being the second most important exporter of wheat, with Canada as the only country with a greater export surplus. The export of wheat varies according to season, but reaches about 150,000,000 to 170,000,000 bushels per year.

Wheat is grown in Argentina in a conveniently compact belt, all of which is in contact with the important grain-shipping ports of Rosario, Bahia Blanca, Buenos Aires, Santa Fé, and La Plata. This area of country is almost fan-shaped with Buenos Aires as the radiating point, and extends a bit below Bahia Blanca in the south, as far west as the eastern boundary of the Province of San Luis, and to the north-east corner of the Province of Córdoba in the north. This more or less oval-shaped strip of country is about 600 miles long from north to south, and about 420 miles wide from east to west, and is all cultivable for wheat-growing, except about one-fifth of the Province of Buenos Aires on the coast side. The wheat belt includes all of the Province of Buenos Aires except the small piece mentioned, the southern half of both the Provinces of Entre Rios and Santa Fé, two-thirds of the Province of Córdoba, a small piece of the Province of San Luis, and one-third of the Territory of La Pampa.

Except the relatively small area in the southern extension from Bahia Blanca to Viedma, which is only about 150 miles long by about 50 miles wide, and has from 16 to 22 inches of average annual rainfall, the whole of this big block of wheat-growing land, covering about 160,000,000 acres, receives between 24 inches of average annual rainfall and 48 inches. A glance at the preceding table, setting out the rainfall recorded throughout Argentina, will show for the provinces forming the wheat belt how every favourable is the distribution of this rainfall, at all events in so far as the encouragement of growth is concerned.

Seasonal Variation in Argentina.

Although the average annual rainfall of the wheat-growing belt is high, and the distribution throughout the year is really good for promoting strong growth, it is naturally subject to some variation, and occasionally the rainfall is so much below normal as to seriously affect the crop and consequently the amount available for export. That this variation can be great is readily seen in the following table, wherein is set out the wheat crop harvested each year in Argentina since the 1928-29 season:—

Seasonal Variation in Wheat Yields in Argentina.

Season.	Area Sown.	Grain Harvested.
	Acres.	Tons.
1928-29	22,770,930	9,349,620
1929-30	20,465,432	4,354,719
1930-31	21,274,110	6,221,951
1931-32	17,277,530	5,884,729
1932-33	19,782,230	6,452,415
1933-34	19,654,531	7,663,965
1934-35	18,804,110	‡6,75[illegible],612

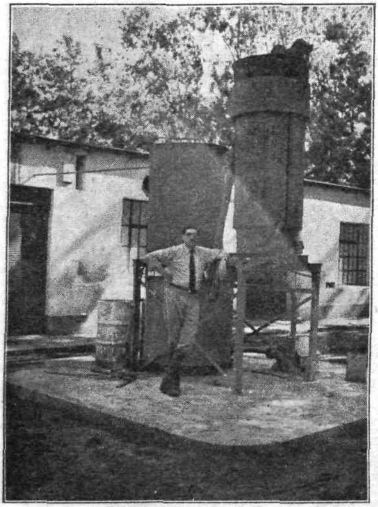
Note.—In translating the table into English the figures used were:—hestarea = 2.47 acres and tonelada = 0.9842 ton.

Soils and Wheat-growing Methods.

The soils of the wheat belt are extremely fertile and very regular in character; as a matter of fact, in a general sort of way they could be put in two classes—the rich chocolate-coloured alluvial soils of a friable silty nature, derived from the

deposit of the disintegration of the rocks of the Andes, of which the great bulk of the area is composed, and the free-working calcareous soils of the relatively small area used for wheat-growing where the average annual rainfall is less than 20 inches. All of the soil is really good, the great bulk of it being suitable for the production of market garden crops, let alone wheat, and this so so much so that no fertilisers of any kind are used for the production of crops, despite the fact that some of the area has been cropped for a few hundreds of years.

Considering the enormous extent of very fertile, easily-worked soils in such a favourable climatic zone, it appears surprising that the average annual wheat yield of Argentina is only about 13 bushels per acre, but this is a passing phase,



Hot Water Apparatus for Pickling Seed Wheat, as used by the Department of Agriculture of Argentina. Although this method of treatment was considered in all important wheat-growing countries as the ideal method for the control of "bunt," few people used it other than for small samples of seed. Now that dry powder treatment has become popular, the hot-water treatment has been discontinued.

and wholly the result of the unsettled nature of the people until recent times, and a rapid improvement can be looked for in the near future if market conditions admit of it. At present a great deal of the wheat is grown by share-farmers working on the large holdings of cattle-raisers, and as in many cases the agreements are for very short periods, even as low as a one-year term, efficient methods cannot be looked for. Even on crop-growing farms the natural conditions are so good that there has been no need in the past to consider seriously the need of a reasonable rotation of crops, and as a consequence much of the land has been so overcropped that weeds and lowered surface fertility lead to light cereal crops.

It was not unusual to hear of rotations like linseed, wheat, linseed, wheat, or even several crops of linseed in succession, then a wheat crop, or of maize, linseed, and wheat grown without any attempt to crop them in regular rotation, and this sort of cropping continued for long periods of time with no resting of the land, and no effort to clean the soil of weeds by a properly worked bare fallow. In all probability this low-yield stage will soon be overcome because the Department of Agriculture is active in wheat-culture work in all directions, and its propaganda should soon be effective.

Types of Wheat Grown in Argentina.

No attempt is made in Argentina to grow any considerable quantity of the type of wheat common to Australia, but the small-grained red wheats rich in protein are the rule in this country. There is, of course, no need for Argentina to encourage this type of wheat for her own requirements, because where proteinous foods, such as meat, milk, eggs, butter, &c., are plentiful, and where vegetables, greens, etc., can be grown so easily, any wheat with fair strength which will make a good-looking white loaf is sufficient. On the other hand, when the market is over-full of wheat, the samples with high strength sell better than the poorer types, and Argentina is concentrating on the wheats with high strength.

All of the Government Experimental Farms where wheat is grown are endeavouring to breed or select heavy-yielding wheats of high strength suitable for local conditions, and some of the newer varieties are promising as improvements on the well-known kinds commonly grown. Besides breeding work, these institutions are endeavouring to distribute amongst wheat-growers seed wheat of really good quality, and to help them in this matter they have installed the large, expensive Schule Grain Graders, which enable the removal of all seeds other than wheat, including 100 per cent. of barley.

Home Consumption of Wheat in Argentina.

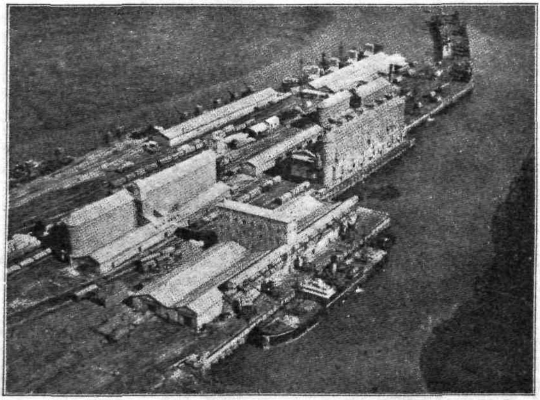
Although Argentina produces a very great quantity of maize and meat, and eats a lot of meat, her people also consume just about a similar amount of wheat per head of population as do Australians. The total consumption within the country for all purposes is about 2,440,000 tons per year, of which something approaching 6 bushels per head of population is used for human and livestock consumption, and the remainder, about 1½ bushels per head, for seed.

Handling the Wheat Crop.

Terminal elevators are provided at the principal shipping ports of Argentina by the Grain Merchants or by the Railway Companies, but as relatively few of the country receiving centres have yet been equipped with grain silos, most of the wheat is received at the terminals in bags, which have to be opened, and the grain shot into the receiving bins. This shortage of country grain-silos is being corrected, because the Grain Merchants are erecting silos as quickly as opportunity offers, and the Government intends to use some of the money being made from the controlled rate of exchange on primary-product exports for a similar purpose. The Terminal Elevators in Argentina are modern structures with up-to-date equipment capable of handling all of the principal kinds of seeds exported from the country, including Wheat, Maize, Linseed, Barley, Oats, Rye, and Canary Seed. The Terminal Elevators erected at Bahia Blanca by the Argentina Southern Railway Company are quite modern, and although the capacity is not as great as some others in the world, the grain-cleaning apparatus attached to the concern is reputed to be of greater capacity than in any other grain elevator. Another modern well-equipped and efficiently controlled grain elevator inspected in detail was that of Messrs. Louis Dreyfus & Co. Limited, of Rosario.

When wheat is being shipped through terminal elevators nothing is done to it other than transferring it from bags into the ships as loose wheat unless the seller so desires, but if arrangements have been made it will be properly cleaned and graded, and quite a fair proportion is treated in this way.

Much of the wheat crop of the country is cut and put through a stationary power-thresher, the grain is bagged, carted to the railway siding, and trucked to the port of shipment. A wheat receiving railway siding in the wheat-carting season looks much the same in Argentina as in Australia, for at these places there are several large stacks of bagged wheat in course of erection with buyer's agent at each, and in almost all yards are to be seen waggon-loads of wheat waiting to be unloaded. At one siding, fairly close to Bahia Blanca, over 30 waggon-loads of wheat were waiting their turn to be unloaded, and as it was still fairly early in the morning many of them must have got a very early start. Instead of weighing the bags of wheat on scales on a platform at a convenient height for the wheat-lumpers to take the bags on their backs, the scales are frequently placed on the



[From *Bulletin of the Pan American Union*.

Terminal Elevators controlled by the Argentine Southern Railway Company (*F.C.S.*) at Bahia *Blanca*. This huge, modern plant for the handling of grain is not the largest in the world, but is reputed to have grain cleaning and grading equipment with greater capacity than any other grain elevator.

ground and two assistants are necessary to lift each bag on to the wheat-lumper's shoulders. Sheds are not provided in many railway station yards for wheat, but the bags of grain are built into rectangular stacks with gables, most of them being 16 bags high to the eaves, and a further eight bags to the single bag at the gable-ridge. All stacks are protected from rain with tarpaulins, which extend one or more bags down the sides.

In most ports when grain is awaiting shipment wheat is stacked out in the open and protected from the weather by tarpaulins stretched over the stacks to the ground on each side. At Messrs. Louis Dreyfus & Co. Ltd. shipping yards at Santa Fé the wheat was in stacks 52 bags high to the gable, and well protected by tightly stretched tarpaulins.

The cornsacks used in Argentina are of jute, but much lighter than those demanded in Australia, and although much of the wheat is exported overseas in bulk, a considerable quantity is also shipped in these light-weight jute bags, and the merchants see nothing wrong with them. For the 1934-35 harvest at Casilda, a country town some miles out of Rosario, these three-bushel cornsacks cost 25 cents each, which at present rate of exchange would be the equivalent of something a little more than 4d. each in Australian currency.

Extending Wheat Production in Argentina.

A full knowledge of the agricultural districts of Argentina is necessary for anyone to forecast the possible extension of wheat production, but without any suggestion as to the extent of an increase a casual glance at the country and the study of the figures of production are quite sufficient to convince one that a marked increase will take place as soon as prices of grain warrant it. Other countries with less suitable wheat-growing soils find that wheat can be grown profitably with considerably less average annual rainfall than 24in., as does Argentina herself in the area of country south of Bahia Blanca, and as there is a strip of country almost 100 miles wide between the 24in. rainfall line and the 16in. line, and almost parallel to the edge of the present wheat belt, there is room for expansion here.

With an improvement in present wheat-growing methods, the introduction of better varieties, and the cultivation of further areas not now used for the purpose, there is certain to be a considerable increase in the wheat production of Argentina in the future, the time and the extent of the increase being dependent only upon a reasonable price being obtainable for wheat produced.

MAIZE IN ARGENTINA.

Next to wheat, maize is the most important crop grown by Argentina, and although other countries might grow much more of this cereal, and notably the United States of America with its yield of something around about 3,000,000,000 bushels a year, there is a very big exportable surplus to be sold each year by Argentina. Despite the enormous production of the United States, which almost equals 75 per cent. of the world's annual yield of maize, after all local requirements are met there remains only about 1½ per cent. of the crop available for export, whereas although Argentina produces only about one-tenth of the yield she has considerably more grain for sale overseas than has the North American States. Since 1909 the maize crops in Argentina have given the yields set out in the following table, wherein is also shown the surpluses available for export:—

Maize Production in Argentina. ¶

Average of Five-Year Periods.	Area Sown.	Production.	Export.
	Acres.	Tons.	Tons.
1909-1913	8,706,429	4,792,463	2,693,747
1919-1923	7,988,245	6,918,926	3,047,517
1924-1928	10,585,284	6,310,227	5,33[illegible],491
1929-1933	14,560,848	7,498,416	6,295,512
1933-34 (season)	16,089,580	5,807,764	5,384,675
1934-35 (season)	†17,364,100	—	§ —

† Estimated.

§ When harvest was well advanced the estimated surplus for export was about 7,500,000 tons.

¶ From "Boletin Mensual de Estadistica Agropecuaria"—January, 1935.

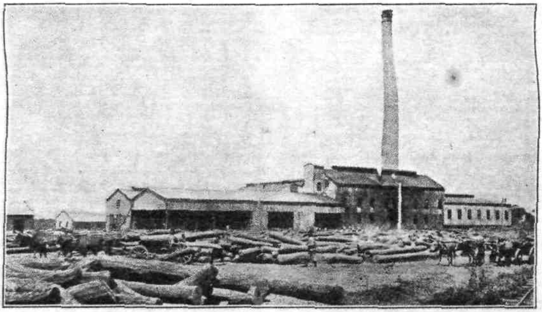
Note.—In translating the table into English the figures used were:—hectarea = 2.47 acres and tonelada = 0.9842 ton.

Maize-growing Districts.

The district described as the wheat-belt of Argentina is almost identical with the maize-growing districts, the only noticeable differences being that the area extends northwards into the Province of Santiago del Estero, where a good lot of maize is grown, and but little of the crop is raised in the Territory of La Pampa. The distribution of the 17,000,000 acres or so seeded to maize in Argentina is *estimated to be as follows:*—

	Per Cent.
Province of Buenos Aires	36.8
Province of Santa Fé	39.8
Province of Córdoba	18.7
Province of Entre Rios	0.8
Province of Santiago del Estero	1.2
Province of San Luis	0.1
Other Provinces or Territories	2.7

The three most important maize-growing Provinces provide 95.2 per cent. of the area sown to the crop, and they are nearly as important for wheat-growing, for about 89 per cent. of the area sown to wheat each year is divided amount these three Provinces.



[From *Bulletin of the Pan American Union.*

Quebracho Logs recently arrived at factory from forests to the north of Argentina. Quebracho is a particularly hard wood and very resistant to exposure in unprotected positions, and so is extremely valuable for railway sleepers, fencing posts, &c. Besides its long life Quebracho is rich in tannin, and as logs and tannin extract forms an important export article for Argentina.

The Maize-growing Conditions.

si
the *It is difficult to imagine better maize-growing conditions than exist over an*
being rea approaching a couple of hundred of millions of acres in Argentina, for here
gable- e to be found very fertile, free-working, chocolate-coloured soils, from 1ft. to
or moi in depth, resting upon sufficiently well-drained subsoils to prevent water-
ing, and receiving from 25in. to 45in. of average annual rainfall, of which
In mer cent. to 95 per cent. is distributed fairly evenly throughout the spring,
open aner, and autumn months. The maize-growing conditions are so good that
the grouticular attention is given to most of the crops, yet of the important maize-
at Santa F g countries of the world Argentina probably has received the highest
by tightly stields of recent years.

The one great disadvantage which maize growers in some parts of the country have to contend with frequently and regularly are the attacks of locusts, and this pest is a real menace in some localities, and does some damage in other districts more or less frequently. In most Provinces where Locust plagues are of frequent occurrence Laws are in existence compelling landholders to make war on the insects, and the damage done appears to be kept within economic limits in most cases.

Types of Maize Grown.

Argentina has concentrated on the production of the Flint type of maize, and growers have been encouraged to do so by merchants and Departmental officers, and with such success that although different-coloured varieties are grown the type has been maintained to such an extent that the terms "Plate" and "Cincuentino" maize have almost come to mean dry, hard, flinty maize. The growing of a certain "Dent" variety of maize which is so objectionable to locusts as to be known locally as "bitter" maize might affect the position, for growers are interesting themselves in this variety; on the other hand, Agricultural Research Officers attached to the Department of Agriculture and others on the staff of the University of Buenos Aires are working on the matter with the hope of breeding varieties of maize of heavy-yielding power, with flinty grain, and as resistant to locusts as is the "bitter" maize.

Harvesting the Ripe Maize.

It is a common practice for maize-growers to have a small plot of one of the tall-growing sorghums, with strong straight stems, and when the maize is ripe the sorghum is cut at ground level and the stalks are used in the construction of the crib to hold the corn cobs. These sorghum stalks are fixed upright on a circle, touching one another, and are kept in position by loops of wire, and so make a cylindrical cob crib.

The ripe maize cobs are picked by hand, husked and bagged, for which the workers receive 1 peso for two bags, each to weigh at least 154lbs., and a good man can collect eight to 10 bags a day. For sterling brought into the country a peso is worth about 13d.

In some places maize is grown for the fattening of pigs, and when the crop is ripe slips are given the run of lucerne fields and maize crops at the same time, and remain there, harvesting their own grain, until ready for market.

Increasing Argentina's Maize Crop.

There seems to be every reason why the maize crop of Argentina can be increased to a very considerable extent when economic conditions permit of it. Only a relatively small proportion of the suitable land in the recognised maize-belt is now cropped with maize, and in many cases soil preparation and after-seeding attention are hardly what are generally recognised as being the most modern. Even in really good maize-growing districts, crops in all stages from young plants 6in. in height to the dry stover of already harvested stands are to be seen. It is extremely difficult to try to imagine what will be the increased yield of the present maize-belt when such things as soil preparation for seeding, time of seeding, spacing of the plants, control of weeds, inter-row cultivation, and manuring, &c., are understood and appreciated, and the certainty of a very greatly enlarged total production when other suitable country is utilised for maize growing, after clearing of bush, draining of land, and the application of irrigation water, seems to be assured.

LINSEED IN ARGENTINA.

Of oil-yielding crops Argentina has become a very prominent producer, and particularly in so far as Linseed is concerned, for the Republic grows much more than any other country, and as a matter of fact her production of this valuable seed almost equals that raised in all the remainder of the world. The progress made in this crop-growing activity has been very great and the area sown to Linseed is double nowadays to what it was as recently as 1911, when 4,026,100 acres were seeded to the crop, whereas 8,099,130 acres were sown in 1934.

The importance of the crop to Argentina is shown in the next table:—

Linseed Production in Argentina. ¶

Average of Five-Year Periods.	Area Sown.	Production.	Export.
	Acres.	Tons.	Tons.
1909-1913	4,111,769	777,968	677,136
1919-1923	4,544,751	1,257,624	1,033,144
1924-1928	6,759,170	1,830,154	1,541,363
1929-1933	7,496,094	1,709,074	1,544,075
1933-34 (season)	6,850,619	1,564,878	1,352,741
1934-35 (season)	†8,099,130	1,801,086	—

† Estimated.

¶ From "Boletin Mensual de Estadistica Agropecuaria"—January, 1935.

Note.—In translating the table into English the figures used were:—hectarea = 2.47 acres and tonelada = 0.9842 ton.

Although so much Linseed is grown in Argentina, this country hardly makes enough Linseed Oil to meet her own requirements, for besides making 4,148 tons of oil in 1933, she imported 115 tons, and in 1934 only exported 32½ tons of oil.

Increasing Argentina's Linseed Crop.

The Linseed crop of Argentina is grown in the same strip of country as are wheat and maize crops, but the Province of Entre Rios is the second most important linseed-producing Province, although not so prominent with wheat and maize. The Province of Santa Fé produces about one-third of the Linseed of the Republic, then after Entre Rios, the Provinces of Buenos Aires and Córdoba are the most important.

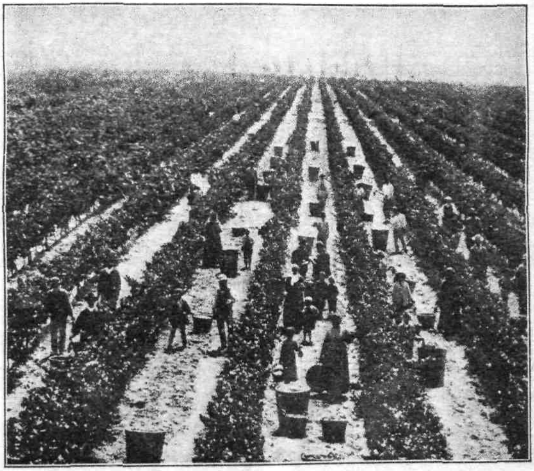
The possibilities of increasing the production of Linseed in this wonderful country are very similar to those existing for Maize. There is still plenty of ideally-suitable land inside the climatic zone favouring this crop which has not yet been brought under the plough, and there is considerable room for improving the linseed-growing practices. A knowledge of varieties and their adaptability to different localities is just being gained, and considerable work in selecting and improving varieties is being done by agricultural research workers. At Pergamino Experiment Station a selected strain, kept nicely true to type, has consistently yielded considerably more seed to the acre, of recent years, than any other of the well-known kinds grown in the locality, and such things as the extension of an improved strain in the localities where adapted must lead rapidly to improved returns.

VINEYARDS IN ARGENTINA.

Although the growing of grape vines and the manufacture of wine is one of the principal agricultural activities of Argentina, it was impossible to look into the industry in any detail, but from what could be seen and heard very considerable expansion can be brought about if this country ever decides to exploit the overseas wine markets. At present there are 3,971 registered wine cellars in Argentina, and in 1933 they manufactured 172,458,000 gallons of wine, and although 88,242 gallons were exported, 211,398 gallons were imported.

Practically all of the vines in this country are grown with the aid of irrigation, and as there are still plenty of streams of water coming down from the Andes into suitable localities for vine-growing, which are not used at present for irrigation, the opportunities for extension are here all of the time, and advantage will surely be taken of them if and when the time is propitious.

Most of the vines of Argentina are grown in what is known as the Cuyo Fruit District, which embraces the areas forming parts of the Provinces of Mendoza and San Juan, but a fairly considerable quantity of wine is produced in the South Fruit District, in the Rio Negro Irrigation Area, and it is generally conceded that the wines from this locality are of better quality than those from districts closer to the Andes. Of the total of 172,458,000 gallons of wine made in 1933, the



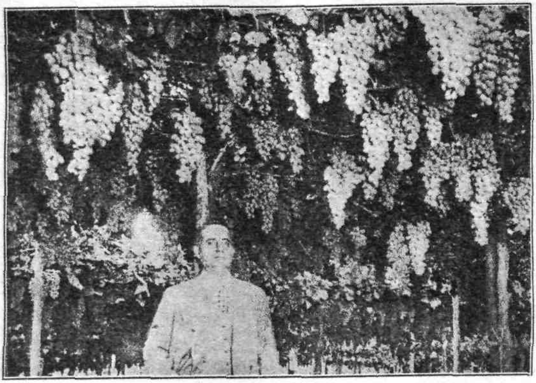
[From *Bulletin of the Pan American Union.*

A View of a small section of one of the large Vineyards of Argentina. Very considerable areas are producing grapes for conversion to wine, and many of the vineyards are really extensive.

Province of Mendoza provided 139,334,800 gallons, the Province of San Juan 18,484,400 gallons, the Territory of Rio Negro 7,436,000 gallons, and the remainder was made up of smaller quantities from other scattered localities.

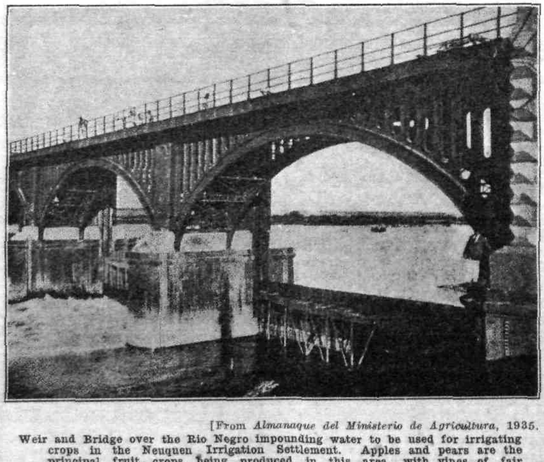
Besides fruit for conversion into wine, grapes are being grown for export as such, and in increasing quantities. Last year, 1934, a total of 6,[illegible]74 tons of boxed grapes were exported, and this fruit deservedly has a good name, for it is efficiently grown on overhead trellises, carefully picked and packed, and cooled down in the recognised manner to carry well without undue wastage. The varieties being grown for export are:—

Alphonse Lavallee	Santa Paula
Emperor	Almeria
Dattier de Beyrouth	Lattuario
Moscatel	Ferral
Molivera Gorda	Cornichon
Prune de Cazouls	Angelino



[From *Argentine Fruit for Export*.

Grapes for export are grown in Argentina under the most modern and approved systems, and the export of the fresh fruit is assuming important dimensions. Heavy yields and well-developed bunches of large berries are secured with irrigation.



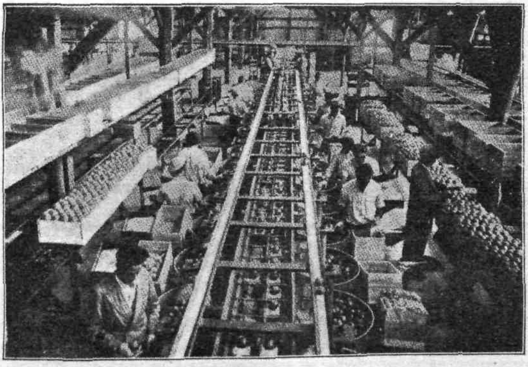
[From *Almanaque del Ministerio de Agricultura*, 1935.

Weir and Bridge over the Rio Negro impounding water to be used for irrigating crops in the Neuquen Irrigation Settlement. Apples and pears are the principal fruit crops being produced in this area, with vines of fair importance, and from these some of the best wines in Argentina are manufactured.

FRUITS IN ARGENTINA.

A recent publication—January, 1935—of the Argentine Republic Ministry of Agriculture, entitled "Argentine Fruit for Export," depicts on the outer cover a man tipping an assortment of fruits on to the top of the world, and given the incentive this form of agricultural production could probably be developed rapidly in Argentina to literally translate this cartoon.

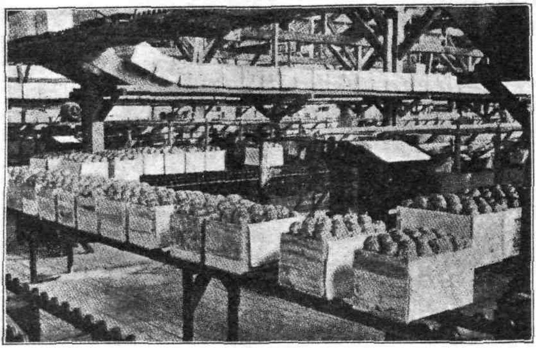
In the Néuquen district of the Rio Negro Irrigation Area are to be seen some of the hundreds of thousands of apple trees originally purchased in Australia by Argentina, and the wonderful growth and production of these varieties in this locality are an eye opener. The varieties consist largely of Delicious, Jonathan, King David, Rome Beauty, and Cox Orange Pippin, with smaller areas of other well-known export sorts. The oldest of the apple trees in this area are 13 years of age, and whole orchards are reputed to be producing from 20 to 30 bushels of export apples per tree. The conditions appear to be almost ideal for apples, and suit pears—Williams, at all events—extremely well. So far "alternate cropping" has not been noticed with any variety, except King David, and even with this it has not been very marked. The fruit trees are grown with irrigation in this low-rainfall district, and although the summer is hot the winter is really cold, and apple trees appear to revel in the conditions. So far few pests have been troublesome, and



[From *Argentine Fruit for Export*.

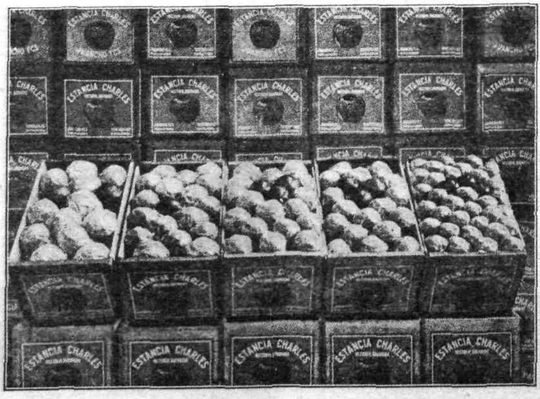
An Apple Grading and Packing Shed in a fruit-growing district of Argentina. Modern equipment, properly arranged in well-constructed and suitably-lighted buildings, is to be found throughout the fruit areas of the country.

the only things needing much attention are Codlin Moth, Red Spider, and sun-scald. The locality is very windy, but Poplars are freely used as breakwinds, and although they grow into high trees very quickly only affect the fruit trees close to them by over shading, but do not retard their growth. The orchards are liberally manured, and green-manuring with Tick Beans, King Island Melilot or Vetches, is carried out nearly every year. After the green manure has been ploughed in, the land is left uncultivated, the reason given being that the weedy, shaded surface reduces the amount of sun-scald. Tamarisk is used a good deal in this area, as in many other parts of Argentina, but it encourages the Basket Moth, which in some years does so much damage to fruit and ornamental trees, to such an extent that its popularity is on the wane.



[From *Argentine Fruit for Export.*

Graded, wrapped, and carefully-packed Fruit travelling towards the nailing machine in a well-equipped fruit-packing shed.



[From *Argentine Fruit for Export.*

A display of Packed Apples, showing different counts, careful wrapping and packing, and attractive labels on the standard export cases.

In the Cuyo District (Mendoza and San Juan) all kinds of fruits, except Citrus and tropical sorts, are grown in large quantities, and, as at Néuquen, packing-houses have been provided to prepare the fruit for Argentinian and export markets. The orchards in this area are all irrigated, and Experiment Stations and Horticultural Experts are provided to help and encourage growers.

In the Delta district, just near Buenos Aires, in the deep, rich silt brought down by the Paraná and Uruguay Rivers, peaches, plums, apples, lemons, oranges, and quinces are grown in quantity; and but relatively little of this really good gardening country is properly reclaimed. Just south of Buenos Aires and not far from the coast apples, pears, plums, and peaches are grown without irrigation.

Two northern districts are also becoming important fruit-growing localities, but very largely for citrus fruits, the one comprising the country which lies between the Paraná and Uruguay Rivers in the Provinces of Entre Rios, Corrientes, and Misiones, and the other well north in the Provinces of Salta, Jujuy, and Tucuman.

Although some of these fruit-growing districts are considerable distances from the ports, the Railway Companies provide cool vans, which have been themselves

[From *Argentine Fruit for Export*.

Examination of Export Fruit at the port of exportation by the Appeal Tribunal. All fruit to be shipped overseas must undergo very rigid inspection, and exporters have the right of appeal to a Special Tribunal should they be dissatisfied with a decision of a Government export inspector.

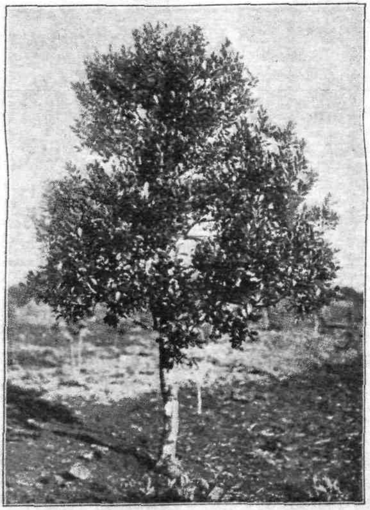
cooled right down before the pre-cooled fruit is loaded from the local Cold Stores, and these vans then make up special fruit express trains, and a uniform temperature is maintained throughout the long journeys to the port.

It appears that Argentina is right on the point of becoming a really important exporter of fruit, at all events of apples and pears. Last year—1934—her total exports consisted of 1,664 tons of pears, 184 tons of apples, 230 tons of peaches, 813 tons of grape-fruit, and 23 tons of oranges and mandarins, but in early 1935 about 270,000 cases of pears, and something over 400,000 cases of apples were stored in the new Cold Stores erected by the Anglo-South American Meat Co. just before the season opened, and much of this supply was from the young orchards at Néuquen and Cuyo which are just coming into full bearing. Because of the growth of the industry the National Government, created in February,

1934, what is known as the Division of Control of Fruit Production which is to be a department of the Ministry of Agriculture. The principal duties of the organisation are to educate fruitgrowers, to increase the cultivation of those varieties called for by the consumers, to improve packing methods, to define national grades and qualities, and more important than all, to encourage exportation by every possible means.

Yerba Mate in Argentina.

A crop which is becoming of increasing importance in Argentina, which has no direct interest for South Australia, but probably will prove to have some for other parts of the Commonwealth in the future, is Yerba Maté (*Ilex paraguayensis*).



[From *Bulletin of the Pan American Union.*
Ilex paraguayensis, a member of the Holly family, from which Yerba Mate is procured.

An infusion of this plant has been used for centuries in South America under various names, such as Brazilian Tea, Maté Tea, &c., and judged by the numbers of Europeans living a normal life in South America, who get beneficial results from imbibing this tea, it appears to have some at least of the medicinal properties claimed for it. It is generally considered to have strongly anti-scorbutic properties, so much so that although many of the natives who take this tea regularly, eat very little food other than meat, it is generally stated that scurvy is unknown with them. Plenty claim it as a sure cure for rheumatics of most kinds, some consider it to have an exhilarating effect on the nervous system, it is even thought to have "saved South America from the scourge of alcohol," and -lly considered by all users of it to keep the bowels functioning

correctly and the digestion in good order. Whether it has these properties or not, the fact remains that its use is extending, that commercial concerns have interested themselves in it and have introduced it to most of the cities of the world, where it can be purchased to-day, and if Australia does not seriously consider growing some for local use, the country will probably become an importer of a rural primary product grown in a climatic zone similar to what exists here.

That this Yerba Maté is an important crop can be realised by remembering that Argentina uses something like 110,000 tons a year, of which she only produces about 50,000 tons, the difference coming from Brazil and Paraguay.

The plant (one of the Hollies) grows into a tree somewhat similar in appearance to an orange tree, and after the trees have reached five or six years of age, they are pruned in alternate years, the cut-off shoots being kiln dried, crushed, and stored for at least 12 months before being retailed for use.

[From *Bulletin of the Pan American Union.*

Roasting the freshly-cut shoots of Ilex paraguayensis before baling, preparatory to marketing the crop.

Much of the Yerba Maté of commerce comes from trees growing in a state of Nature, and as these are only found in the sub-tropics in Brazil, Paraguay, and Northern Argentina it could hardly be expected that Yerba Maté grown in a different climatic zone would produce an article of a similar quality to that well known at present, and so we cannot expect to grow the crop in South Australia with any chance of success.

OTHER CROPS OF IMPORTANCE IN ARGENTINA.

Most crops required by the country are grown in the country, the exception being, that only about half of the Yerba Maté and Tobacco used are locally grown; about two-thirds of the rice required is imported; some fruit, mainly pineapples and bananas, must be brought over the border; and despite the very high production a little wine is imported as well. Other than these crops, very little of any agricultural product is purchased by Argentina from outside, and as a matter of fact she exports some, even though it may be a small quantity, of nearly every kind of crop raised, and in some cases quite a lot is sent to other countries.

OATS.

The Oat crop is a really important one in Argentina, the area sown in 1933-34 being 3,564,951 acres, which is 36 per cent. higher than the 2,616,594 acres grown in 1922-23. The yield secured in 1933-34 reached 819,839 tons, of which 497,878 tons were exported, such figures showing that the crop forms an important part of the agriculture of the country. As more land is brought under the plough in Argentina, a greater area will probably be seeded to oats than at present, but there seems no reason why this particular crop should ever become more important, relatively to other forms of cropping, in this country.

BARLEY.

Although Barley is not at present as important as Oats in Argentina, its progress has been greater of recent years, for the area sown to it has increased from 598,901 acres in 1922-23 to 1,781,784 acres in 1933-34, which is 2.98 times as great. The yield secured in 1933-34 was 771,613 tons, of which 527,623 tons were exported. Argentina possesses a fairly considerable area of country suitable for the production of Barley of fairly good malting quality, and the crop is likely to become of increasing importance.

[From *Bulletin of the Pan American Union.*
Pressing and baling Yerba Mate in readiness for transporting to market.

RYE.

For a country which grows Wheat, Maize, and Barley so well, the very rapid increase in the area sown to Rye, from 365,683 acres in 1922-23 to 1,767,334 acres in 1933-34, or 4.83 times as much, is rather surprising. The yield obtained in 1933-34 was 233,255 tons, of which 104,028 tons were exported. The crop could easily be extended to a very great extent if desired, but it is doubtful if it will ever become relatively more important than at present.

CANARY SEED.

Canary Seed or Bird Seed as it is sometimes called, is grown in increasing quantities in Argentina, and largely for export to other countries. In 1933-34 the area sown to the crop was 116,954 acres, which returned 35,431 tons of

seed, and of this 25,309 tons were exported. As this crop is easy to grow in really good cereal-growing conditions it will not be difficult for Argentina to increase her production of this crop if market conditions warrant it.

COTTON.

It has been estimated that there are over 100,000,000 acres of land in Argentina, in suitable climatic conditions, which some day can be used for the growing of Cotton if it ever becomes desirable. In 1933-34 the area seeded to the crop, mainly in the Territory of the Chaco, was 342,095 acres, and of the yield of 31,997 tons of fibre, some 26,683 tons were exported, most of it going to Liverpool.

PEANUTS.

The Peanut is rapidly becoming more important throughout the world as a direct foodstuff, as a vegetable-oil producer, and as a vegetable paste for use where animal fats are scanty, and this applies to Argentina, as to so many other

[From *Cartilla Argentina*.

An extensive grove of young Ilex paraguayensis trees in Argentina. Imports of Yerba Mate have been so great that the authorities are making strenuous efforts to produce the requirements of the country in suitable locations in North Argentina.

countries. Although the area under the crop reached 221,287 acres in 1933-34, which yielded 102,258 tons of nuts, practically all was required within the country, for there was a surplus for export of 603 tons only. The sub-tropical zone with good agricultural soils of fairly light texture is so great in Argentina that this crop can be increased to any desired extent almost.

RICE.

On the 47,202 acres of land seeded to Rice in 1933-34, a yield of 32,981 tons was secured, which was only about one-third of the amount required for local consumption. The deficiency can easily be made up in this country with its plentiful water supply in both sub-tropical and semi-arid climatic zones.

Potatoes.

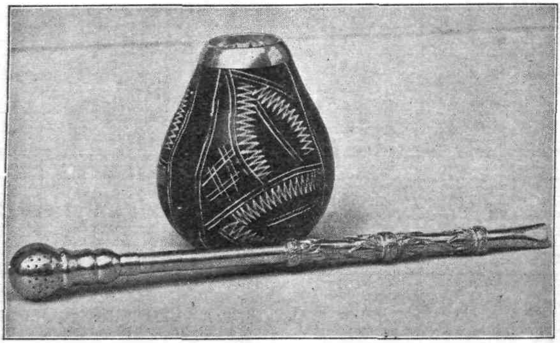
Argentina has passed the stage of only growing its own requirements of Potatoes, for she exported 30,913 tons of the 1933-34 crop of 904,781 tons, which were dug from an area of 392,183 acres. So much of Argentina consists of market-gardening conditions that such crops as Potatoes can be grown very easily, and the possible extension of the crop is almost unlimited.

Sunflower Seed.

Sunflowers can usually be grown well where Maize flourishes, and they certainly do so in Argentina, and although there is very little of the crop grown other than in single rows and in relatively small patches, sufficient seed was collected to supply the needs of the country and to permit of the export of 9,759 tons in 1934.

Rape Seed.

Another vegetable-oil seed which is coming into prominence in Argentina is Rape Seed to the extent that although a lot of oil was extracted in the country, it was still possible to export 4,095 tons of seed in 1934.



[Photo. by Government Photolithographer.

Mate pot and Bombilla. Many South Americans, and more particularly country people, regularly and frequently imbibe Yerba Mate from a Mate pot, which is made from a cleaned-out gourd. Nearly filled with tea leaves, a small quantity of hot water is added, and when this has been sucked up through the Bombilla more hot water is poured into the Mate pot. The process is repeated again and again until the hot water no longer extracts a flavour from the tea leaves, when the tea leaves are replaced by a fresh supply. If a party are imbibing Mate tea the persons present take the tea in rotation, using the same Mate pot and Bombilla.

Vegetable Oils.

Quite an assortment of vegetable oils are produced in quantity in Argentina, and in all cases to the extent of supplying local needs and leaving a surplus for export with the exception of Linseed Oil, a little of which is imported.

Vegetable Oil Manufactured in Argentina, 1932.

Factories at work	33
Seed treated	155,061 tons
Oil obtained	36,401 tons
Yield of oil	23.5 per cent.
Oil cake produced	81,066 tons

Of these oils the principal ones are Peanut, Rape Seed, Cotton Seed, Linseed, and Sunflower, and occupy the following proportions of the total:-

Principal Kinds of Oil Made in Argentina.

Kind of Oil.		1932.			1933.
	Seed Treated.	Oil Obtained.	Yield of Oil.	Oil Cake.	Oil Obtained.
	Tons.	Tons.	%	Tons.	Tons.
Peanut	41,188	12,518	30·4	19,965	13,469
Rape seed	42,012	12,104	29·0	29,292	12,461
Cotton seed	44,547	5,614	12·6	17,947	8,642
Linseed	15,923	4,479	28·1	11,269	4,148
Sunflower	4,403	880	20·0	1,458	2,627
Tártago	2,358	594	25·2	380	455
Maize	4,583	104	2·3	734	—
Olive	46	10	21·9	20	96

THE PASTURES OF ARGENTINA.

The fact that Argentina maintains so many domesticated animals and obtains so much of her revenue from livestock products is a sure indication that her pastures are extremely good. This is certainly so at the present time, when most of the animals are reared on pastures consisting of introduced plants; but even before agriculturists commenced to grow crops for grazing off, the pastures must have been fairly good on large areas of country, otherwise the extensive herds of wild cattle and wild horses would not have developed, let alone the animals retain the size and ability to put on condition which they appear to have done. When cropping was undertaken on a large scale and strong-growing weeds made their appearance in such quantity, it became necessary to establish pastures to replace those destroyed by cultivation. Of the plants introduced, Lucerne was outstandingly successful, but some others are becoming popular, and others have established themselves and play an important part in helping to support the livestock of the country.

LUCERNE IN ARGENTINA.

It is almost a certainty that if Lucerne had not proved such a remarkable success as it has in Argentina, this country would not have made the enormous progress in meat production which puts her so much in front of the remainder of the world in this connection. Sub-tropical conditions are notoriously deficient in so far as nutritive value of natural pastures are concerned, and the very few leguminous forage plants indigenous to the conditions, and the difficulty of securing profuse growth of fine-textured legumes introduced into these particular conditions, appear to have a good deal to do with one of the limiting factors of such pastures. In much of Argentina this difficulty was immediately overcome, because the natural conditions obtaining are almost ideally suited to the very prolific growth of Lucerne, and as it is a crop which can be established so easily, advantage has been taken of it, to the extent that in 1933 the area carrying this crop was 13,353,907 acres.

Not only is Lucerne so useful because of its high nutritive value and high protein content, but it is so strong a grower and so hardy that it can compete fairly well with most of the prolific-growing weeds which appear in such rich country, and it is one of the few fodders, other than grasses with root-stocks, which can compete at all well with these pests.

It is difficult to imagine more ideal Lucerne-growing conditions than obtain over tens of thousands of acres in Argentina, for the soils are composed of extremely rich silt, 1ft. to 2ft. or more in depth and of a free-working nature, resting on sufficiently open subsoils to prevent waterlogging and to permit of the penetration of the Lucerne roots. The rainfall varies from 25 inches to 50 inches, and about

30 per cent. of this rain falls in each of the three-month periods of spring, summer, and autumn when the Lucerne requires it. As the temperatures of this area of country are fairly high during the rainy period of the year, the Lucerne flourishes. Some parts of the strip of country are even more favourable for the growth of Lucerne than others because the underground water-table is within reach of the Lucerne roots, and where this is so the growth of the crop is tremendous.

The growth made by the better stands of Lucerne is very striking because not only is the rate of growth really rapid, but the plants grow so tall before they attempt to flower that the quantity of growth made is remarkable. It is of common occurrence to be informed of the six cuts a year on the average, and occasionally some of the fields give up to 10 cuts a year, and when the profusion of the growth is taken into account a realisation of the heavy yields is possible. All of the Lucerne of Argentina does not give yields like those mentioned, nor for that matter do a great proportion of the crops, but the better-cared-for crops do, and it is possible over very extensive areas indeed.

A stand of Lucerne in Argentina at the end of March, 1935. The natural conditions obtaining in much of the Great Plain of Argentina are almost ideal for the production of lucerne.

Judged by Australian standards the values of these lands are extremely low, even when cut into small dairy farms, and an area in one locality right in the really good Lucerne-growing country, was cut up a short while ago into blocks of 80 acres to 500 acres, and these were sold for 300 pesos to 350 pesos per hectarea, which would mean £6 11s. 7d. to £7 13s. 6d. per acre if a person took English money to purchase the land, or £8 4s. 6d. to £9 11s. 10d. per acre if purchased with Australian currency, but if purchased by an Argentinian at par would cost the equivalent of £12 13s. to £14 15s. 2d. per acre in Australian currency. Some of this land is being rented by dairy farmers who are paying 18 pesos to 22 pesos per hectarea, equal to 7s. 11d. to 9s. 8d. per acre if paid in sterling, and 9s. 11d. to 12s. 1d. per acre if in Australian currency, but these figures would be increased to 15s. 2d. to 18s. 6d. per acre as the Australian equivalent of Argentinian par. This land is carrying a Friesian cow per hectarea (2.47 acres), as well as rearing all calves.

Managing the Lucerne Crop.

Lucerne has been grown so easily in the past that there are no set systems to follow, and it is still being seeded in all sorts of ways, but it appears that in some places, at all events, the hit-and-miss rules are not so effective as they used to be, and reasonable soil preparation and some care is necessary at seeding time. The variations in the methods of establishing the crop are great, as can be realised by the following systems which were encountered:—

(*a*) Maize is grown with cultivation between the rows, then the land is cropped with Linseed for two or three years, and Lucerne seed is put in with the last Linseed crop.

(*b*) As no Maize is grown, Linseed is sown for three years in succession, and in the last crop Lucerne is sown. The Lucerne is left for five years, after which the process is repeated.

(*c*) After the Lucerne has thinned out the land is cropped with Maize, then with Linseed with Lucerne seed mixed at seeding.

(*d*) Where Maize is important there was a case of this crop being grown for four years in succession, then a crop of Linseed seeded with 18lbs. Lucerne seed per acre.

(*e*) On an estancia, where no crops are carted off the land, Rye (or Oats), then Sorghum followed by Rye with 18lbs. Lucerne seed per acre is the method followed, the last Rye crop being fed down heavily.

(*f*) Couch grass (*Cynodon dactylon*) is a very troublesome weed in some Argentina districts, and where this bad weed is prevalent crops of some kind are grown for three or four years before the land is reseeded to Lucerne, but where the Couch grass is not bad the Lucerne is sometimes sown soon after ploughing and harrowing the land.

(*g*) Sudan grass is sown soon after ploughing in the spring, then after feeding-off the crop in the autumn Rye or Oats are sown, fed down heavily, and the land is then seeded with Lucerne in the spring.

All of these methods of seeding the Lucerne crop have given reasonably good results, but on land where the crop has been grown for a long time it is being found that much more care is now necessary to ensure a long-lived stand than was so previously, and as a consequence quite good soil preparation is being given in some cases. The deterioration of the Lucerne crop is usually laid to the blame of the increase in the competition from weeds, but although this is partly true, poor cultivation methods, lack of manure, and over-grazing must carry their share of the blame, and it is not too certain that lack of lime and phosphorus are not as important as all other reasons put together.

Weeds grow very strongly in the best of the Lucerne land and often affect the growth of the crop for a portion or even the whole of a season, but if the fields be cut with a mower after the weeds have a good start, leaving the material to drop, and then have it fired as soon as sufficiently dry, the fields are cleaned very nicely, and in the seasons which admit of this practice much good results.

The Lucerne crop is not subject to many pests in Argentina, but the caterpillars of the yellow moth do some damage, which does not, however, appear to worry growers to any extent. Eelworm is thinning out some stands, and a good deal of work is being done by officers of the Faculty of Agriculture of the University of Buenos Aires in searching for immune strains of Argentina Lucerne.

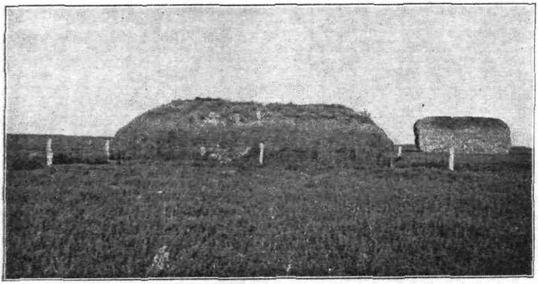
In most districts where irrigation is practised Lucerne is grown with the aid of artificial watering and grows just as well as in other countries where similar methods are followed. This form of Lucerne culture can be extended to an enormous degree some day, but there is still plenty of the good agricultural country which can be brought under the crop without needing to think of the expense of preparing for irrigation.

Storing Lucerne as Hay and Silage.

It is one of the striking things of a tour through the Lucerne-growing districts of *Argentina to see the quantities* of forage stored as reserves in the form of hay and silage. Not only are stacks to be seen on holding after holding, but the size and number of the stacks, from relatively small areas in some cases, are often very surprising. Lucerne that will grow sufficiently high to admit of easy cutting lends itself to storage either as hay or silage, but when it grows so freely as it does in much of this country the job is relatively easy.

Labour is sufficiently low priced in Argentina that mechanisation as carried out in some other countries is not so necessary, although some of the Lucerne-growers have the most modern hay-handling plants on the market.

Lucerne silage is almost invariably made in stacks built on the surface of the ground, or at most started in shallow pits about 2ft. deep, opened up to get sufficient soil to weight down the stack when completed. A variation from standard method adopted by one estancia manager was to cart all of the material into the stack with horse-drawn sledge, keeping the sides of the stack upright during building, but leaving the ends of sufficiently gentle slope to allow teams to get



A stack of Lucerne Silage and one of Lucerne Hay in Argentina. Very large supplies of both silage and hay are kept in many parts of Argentina in readiness for the fairly severe short-period droughts which occasionally occur.

to the top of the stack. As soon as all material was put on the stack the ends were squared off, the forage in the sloping ends being thrown on top of the stack or carted out to stock, then soil from alongside the stack was thrown on *top for weighting purposes. When the stack was to be used the soil from on top* was thrown back into the hole from whence it came.

CEREALS.

Next to Lucerne the cereals, Rye and Oats, are probably the most important grazing plants in Argentina. One or other, seldom a mixture of the two cereals, is sown in the early autumn, say late February or March, and is grazed as a rule as soon as there is sufficient growth for the animals to get a good bite, but in other cases the crop is left until the calves are weaned when they are put straight on to the cereal. Cattle-men like Rye in autumn and early winter and Oats in late winter and early spring, and find that calves suffer no check from weaning if put on to the cereal crops, and older cattle fatten very quickly. Something about a bushel of Rye is used and close to two bushels of oats, but no fertiliser of any *kind is added. Barley is sometimes drilled into Lucerne fields with the object*

of farrowing pigs on the crop in late autumn or early winter, and good results are claimed for this crop. The cereal crops are frequently grazed down very heavily in the spring and then the land is cultivated and sown to a summer-growing fodder crop.

SORGHUM AND SUDAN GRASS.

Forage Sorghum and Sudan grass are becoming increasingly popular summer-growing forage crops, as it is found that cattle fatten very quickly on either crop if they have the run of a Lucerne field at the time they are grazing down the Sorghum. The crop is sown in the spring through every seed-feeder of an ordinary seed-drill, is fed down close when in head in the autumn and then frequently the land is ploughed and seeded to Rye or Oats for winter feeding. Sorghum and Sudan grass, and particularly the latter, have a fairly pronounced smothering effect on Couch grass, and so help to clean the land so that Lucerne can be re-established.

RHODES GRASS.

In the north where the climate is definitely sub-tropical, South African Rhodes Grass (*Chloris gayana*) is being seeded to a fairly considerable extent, and appears to be giving fairly good results.

OTHER PASTURE PLANTS.

Of the pasture plants being established by landholders, Lucerne and cereals are the only ones of great importance, but there are some introduced plants that ar. establishing themselves over large areas and proving useful for stock, and one or two indigenous plants are spreading since the country has been cultivated or stocked.

COUCH OR BERMUDA GRASS (*Cynodon dactylon*).—Couch Grass has spread over considerable areas of the best agricultural land in Argentina, and although leading to a great deal of trouble when attempting to eradicate it to re-establish Lucerne, helps towards the grazing of such great numbers of livestock. Growing so profusely as it does in this country and with about two-thirds of its growth soft and fairly sappy, it is quite a good pasture plant and is one of the important fodders of the cattle lands.

PRAIRIE GRASS (*Bromus unioloides*).—Prairie Grass appears in much of the Lucerne country when the Lucerne stands begin to thin out, and proves a long-lived plant in these conditions. Cattle-men like it very much, for when there is a noticeable proportion of this grass in the Lucerne, cattle do very much better and the risks of bloating are reduced.

PASPALUM (*Paspalum dilatatum*) is indigenous to South America and is present in quantity in the sub-tropics. Although not artificially established to any great extent, it appears to be spreading, and grows stronger in country that has been stocked for a long time than in newer country.

WATER COUCH (*Paspalum notatum*).—Although Water Couch was only seen in damper locations, some of the patches were of fairly considerable extent, and it is widespread.

JOHNSON GRASS (*Sorghum halepense*).—Johnson Grass is becoming a serious pest in some of the best cropping areas in Argentina, and the Min.stry of Agriculture is repeatedly warning farmers to eradicate it or at all events to endeavour to control it. If handled in the proper manner, as some graziers are doing, this grass provides an enormous amount of grazing and animals fatten fairly well on it.

WHITE CLOVER (*Trifolium repens*).—Patches of White Clover are making their appearance in lots of districts and the plants are making strong vigorous growth, and in all probability this wonderful pasture plant will eventually prove of great value in Argentina.

It is a very noticeable fact in the good pasture lands of Argentina that there are few leguminous plants of any kind which are indigenous, and introduced ones, with the exception of Lucerne, are rare. This is usual in sub-tropical conditions, and is a limiting factor to what pastures can do, but the weakness was overcome in Argentina by the success and general use of Lucerne. In some of the undulating country between the Rivers Paraná and Uruguay, and in the calcareous districts on the south end of the Great Plain, Toothed Medic (*Medicago denticulata*), an introduced leguminous annual, appears to grow strongly.

WEED GROWTH IN ARGENTINA.

As is to be expected in such good natural conditions as so much of Argentina is blessed with, the growth of weeds is very profuse indeed, and several of them are rapidly becoming a menace to crop-growing. White Goosefoot (*Chenopodium album*) was seen to be covering hundreds of acres, and had reached a height of 9ft.; whilst on thousands of acres a weed very much like Wild Amarantus had made 4ft. of growth in five weeks after the land was ploughed. Plants carrying burrs abound, particularly one known as Abrojo (*Tribulus maximus*), which produces a plentiful crop of large burrs, and what we know as Bathurst Burr (*Xanthium spinosum*) is there called Cepa ceballo, and is very abundant and strong growing. Another nasty burr is known as Rosetta Burr, and as it is more or less grass-like in appearance, it is not easy to find in luxuriant pastures until the burrs are picked up. Couch Grass has already been referred to as a pasture grass, but this is a very serious pest when it appears in land to be cropped at all frequently, and it covers large areas now and is spreading rapidly. Johnson Grass was introduced into the country for forage purposes, but it has spread so extensively into the rich cropping lands that it is feared that control is impossible, and that the growing of crops will be prevented. Of other troublesome weeds, thistles of several kinds are plentiful and grow very strongly indeed, and there is a long list of annuals, most of which will be kept under fairly easily when good cultivation practices are followed.

LOCUSTS IN ARGENTINA.

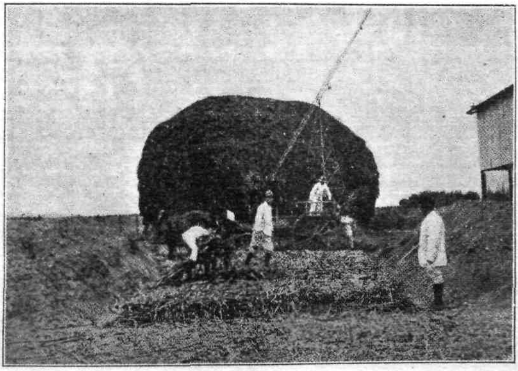
Probably the worst pests of the crops grown in Argentina are the Locusts, which reach plague dimensions in some districts practically every year and in others fairly frequently. So much damage is done by these insects that the Provinces concerned and the National Government have legislation dealing with their control. There was a fairly bad attack in 1933, but in 1934 they were even more plentiful, and the damage done was greater. Information in connection with the methods of control undertaken in the various Provinces affected was not available, but what took place in the Province of Entre Rios gives some idea of the severity of the attack and the enormous cost of trying to control the plague. The National Government helps in the payment of costs of destruction of the insects, and in 1933 paid for the destruction of 5,740 tons of eggs dug out of the soil in Entre Rios at the rate of 20 cents per kilo. The burning with flare lamps accounted for 4,000 tons of Locust mosquitos, and it was estimated that 45,580 tons of Locust hoppers were destroyed by leading them into pits sunk along a zinc barrier erected for the purpose of leading them to the pits. During the winter of 1933 4,900 tons of flying Locusts were bagged in the mornings before they again got on the wing, and were destroyed. The above figures apply to one Province only, and as several are affected, and seriously tackle the problem of control, the immensity of the job and the high cost of the operations can well be imagined.

In the Province of Santa Fé, where more or less severe attacks are expected every year, it is compulsory for landholders to provide themselves with zinc sheets for the erection of fences to lead the Locust hoppers into pits dug for their reception. The zinc sheets, which are 39in. long by 16in. wide, together with pegs and clips,

are supplied by Government at 25 cents for a sheet, peg, and clip, which at present is considered to be below cost price. When Locust hoppers appear it is compulsory for farmers to fight them to protect their own crops, and if the local authorities controlling the attack decide to erect a long fence between districts, landholders must supply the amount of labour decided upon by the controllers. In erecting fences the zinc sheets are not let into the ground, but soil is thrown against them to prevent the hoppers getting underneath. The pits sunk along the line of fence are from 4ft. to 6ft. in depth, and sometimes the top of the pit is lined inside with zinc to prevent the escape of hoppers if the pit gets rather full. When pits are nearly full the insects are killed by having burning rubbish thrown on them or else they are covered with soil as the pit is filled in.

CONSERVATION OF FODDER.

Although much of Argentina is so very well favoured with climatic conditions almost ideal for the growth of plants she occasionally experiences a short-period



[From *Almanaque del Ministerio de Agricultura*, 1935.

Filling a pit silo in Argentina. Although Lucerne is usually made into stack silage, other fodder plants are generally stored in overhead or underground silos.

drought, and when it does happen that rain is withheld for a few months livestock which have been accustomed to luxuriant pastures throughout their lives suffer very considerably. These short droughts are of fairly rare occurrence, but most of the better-managed holdings guard against them by storing large quantities of forage in the form of hay and silage. This is done fairly easily where Lucerne is grown, because the growth is profuse and is easily converted into good hay and silage.

When the first cut of Lucerne with the accompanying weeds is converted into silage the subsequent cuts are very suitable for hay, consisting almost wholly of clean Lucerne. Much of the hay seen was almost 100 per cent. Lucerne, of a good colour and tough cure, but some had obviously been left in the fields too long before carting to stacks.

The Lucerne silage is usually made in stacks, and then if any excavation is made at all it will only be sufficiently deep to provide enough soil to use as weight on top of the stack when completed, and never exceeds 2ft. in depth. All samples of Lucerne silage seen were of really good quality, and would be readily consumed by cattle when it became necessary to use it.

Considerable quantities of both hay and silage are stored throughout the best of the cattle country, and on the appearance of the stacks it was some time since it was last necessary to utilise this kind of foodstuff to feed to the livestock.

On dairy farms where silos are provided maize and sorghum are popular for conserving as silage, and in a few cases Sunflowers were heard of as the crop which was stored in this way.

IRRIGATION IN ARGENTINA.

Time did not permit of an investigation into the irrigation settlements of Argentina, but there are evidences of the possibilities of this form of agriculture in many parts of the country. At present the area being artificially watered is between 3,700,000 acres and 4,000,000 acres, including practically all of the vines, most of the fruit trees. and limited areas of almost all other kinds of crops.

Relatively little has been done in the direction of irrigation considering the enormous quantity of water available and the tremendous area of suitable land in close proximity to the water. The wonderful Paraná River runs for hundreds of miles down the edge of a fertile plain, in warm to hot but equable climate, and admirably suited to irrigation. The Uruguay River runs alongside large areas of fertile land of a gently undulating nature, much of which could easily be watered. Almost countless short streams come from the Andes, some of which have been harnessed for irrigation, but there are many more yet to be controlled. About a dozen important streams traverse from the Andes to the coast the country to the south of the high-rainfall portion of the Great Plain, besides many smaller streams, and several of them pass through country suitable for irrigation. That there are great possibilities of increased irrigation in the low-rainfall country in the south of Argentina can be realised from the Departmental estimate that the 100,000 acres or so being irrigated from the Rio Negro can be increased to 1,000,000 from the same stream.

The melting of the snow of the Andes assures a regular supply of water in the streams in the warm period of the year, and fertile soils with good natural drainage are available in considerable areas, so the possibilities of extending the irrigation activities of Argentina are almost boundess.

ARGENTINA LIVESTOCK.

Besides the very heavy production and export of crops, Argentina possesses natural conditions particularly suitable for the development of livestock, and although this branch of agriculture is not quite so important at present as are her crop-growing activities it is considerable, and, moreover, is capable of great extension in the future. Nowadays about 30 per cent. of the value of the total exports of Argentina is earned by livestock products, which is somewhat below the percentage of past years (42 per cent. in 1912), but a rapid recovery could be made as soon as economic conditions warrant it. The country is blessed with agricultural, freightage, and economic advantages for the production of farm livestock which are much in advance of other countries, and has made full use of these advantages since she has had stable government, at all events in so far as Beef Cattle are concerned, and to a lesser extent with Pigs and Sheep.

That domesticated animals, and particularly meat-producing animals, have reached very important dimensions in Argentina can be gauged by the following figures:—

Farm Livestock in Argentina at 1930 *Census.*

Cattle	32,211,855
Sheep	44,413,221
Pigs	3,768,738
Horses	9,858,111
Goats	5,647,396
Asses and mules	1,039,420
Hens	22,500,000
Roosters	14,928,427
Turkeys	1,937,395
Ducks	1,437,709
Geese	403,296
Pigeons	5,863,164

The levelness of the Great Plain of Argentina, the richness of the soil, the well-distributed heavy rainfall, the close proximity of water to the surface, the favourable climate, and the prolific growth of pastures render a very large area of this country eminently suited to the production of cattle, and this form of livestock farming has been developed to an extent only limited by markets.

(*To be continued.*)

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PIGS AND THEIR MANAGEMENT.

[R. C. Pocock, Lameroo.]

[Paper read at the 46th Congress of the Agricultural Bureau of South Australia.]

The breeding and feeding of pigs for the local and overseas markets of to-day, has been so altered in recent times that there still exist in South Australia many farmers breeding and feeding pigs who are not well acquainted with the correct types to which we should give greater attention if we are to produce pork and bacon of a uniformly lean and well-finished character. It cannot be denied that there are many pigs that go to the market each week which are of a class that will not receive very much consideration from buyers, and when cured—although they are bought cheaply, they find little favour with the public—tend, in a general way, to reduce the sale of bacon, especially pigs that are over fat. This feature to-day is the greatest crime of the feeder. Strive to gain uniformity, and this when achieved, will make for greater sales of bacon to the public, because to-day only first class articles command attention.

I do not suggest an "Eat More Bacon Week," but to increase consumption should be the aim of the feeder as well as the curer.

To obtain some of the results suggested, the right breed or cross breed of pig must be produced to fill the bill.

There are some good breeds of pigs that will answer the need and even in each of these breeds, there are many unsuitable pigs. There has been a suggestion made in the Lameroo Branch of the Bureau, for all members to go in for one breed of pigs, the Branch to purchase collectively suitable boar pigs for the use of the small breeders.

BREEDS OF PIGS.

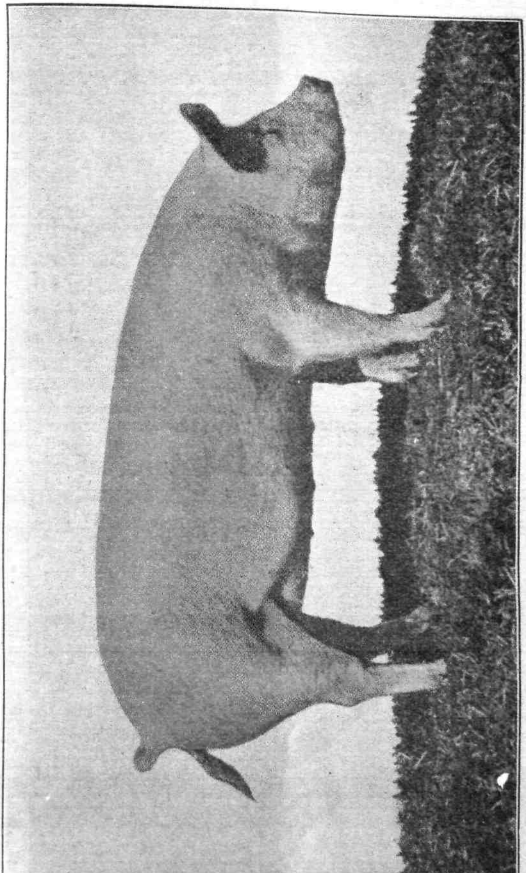
I prefer the White Pigs, because they are even in colour and generally give an even type, are quick growers and do not tend to over-fatten. It is realised that there are other good breeds of pigs, the Canadian Berkshire and Tamworth being very good and by the judicious crossing of these breeds, it is possible to obtain the advantages that come from breeding cross-breds, inasmuch as the young are more numerous and thrive more quickly than the pure-bred pigs of any one breed.

THE ADVANTAGES OF GRAZING.

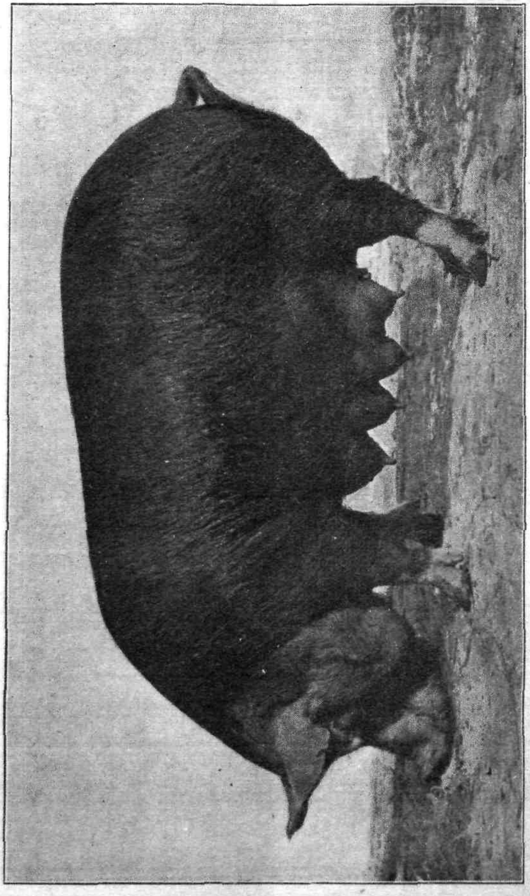
Attention must be given to the best methods of developing the pigs into active, lean and clean bodied animals. This is best done by grazing the pigs in paddocks as much as possible, making them forage for themselves. For sows carrying litters, this is essential. The day of closed-in walled sties for general use is gone. To keep the pigs active is the chief aim, and in the paddocks it is a good plan to make the pigs walk as much as possible, and where water is laid on have the drinking trough at the opposite end of the paddock to that in which the pigs are fed. Of course, with sows, the use of self-feeders is not economical.

FEEDING THE SOWS.

The feeding of sows needs special attention. They should not be allowed to become lazy through over-fatness, but be grazed out in the paddocks as much as possible. When green grass is not available, lucerne or green summer fodder is a great help. When a sow is about to farrow, she should be a little bit on the hungry side, because overfulness is inclined to make the pig uncomfortable. It is when the sow is in this condition that many of the little pigs are crushed. Do not feed the sow until 12 hours after farrowing and then only give a small quantity of sloppy feed. Bran is a good feed, with some milk to encourage the sow to milk well. A good start for the piglets is necessary.



Ideal Type of Pig for present-day market requirements.



Canadian Berkshire Sow "Waitawa Canadian Clarinder" (Roseworthy Agricultural College).

REARING THE LITTER.

In rearing little pigs, milk is almost essential. Of course it can be done without, but milk makes pig rearing easier and more profitable.

To keep sows on the thin side, good fences are necessary. A good fence can be made with barbed wires only. This method is effective and economical.

Little pigs should be castrated at about four weeks so that the wounds will be well healed by the time they are ready to wean.

When the pigs are taken from their mothers, keep them in good heart so that they get no setback. They require sloppy feed until about 12 weeks old, when they can be fed grain and meat meal, at the same time graze them as much as possible.

In winter, a crop of barley sown for the pigs to graze will reduce the ration of grain; the pigs grow quickly when greenfeed is available. The greenfeed is especially useful to sows about to farrow.

It is well to have the sows in the paddocks or sties in which they are to farrow a week or so before the event, so that they will become accustomed to the surroundings and be more contented.

Small paddocks and straw shelters provide the best conveniences for breeding, because the pigs are free and undisturbed, whereas in small confined sties more little pigs are laid on.

A sow should have from 8 to 10 pigs to be profitable; do not keep sows after they have reared about five litters, because as they become older, they make very awkward mothers.

On a farm which is not a dairy farm, and milk is not very plentiful, it is necessary to get the young pigs to do without milk, and as there is a decided tendency for them to fall away in condition very quickly, when getting them to feed on meat meal and grain, every effort must be made to provide for them some sloppy food until they are 12 weeks old. After this age, they will do on the harder feed.

FEEDING COSTS AND MARKETING.

On an average it takes about 3 bags of barley and 50lbs. of meat meal to raise a pig to 120lbs. weight, the cost is approximately 18s. for grain and 6s. for meat meal. A weaner at 8 weeks is worth, say, 14s., *i.e.*, a pig will cost about 38s. to grow, taking grain at market rates.

The average price realised for a grown pig is about 50s., therefore, each pig will show about 12s. profit without taking labour into consideration.

An interesting point is that a truck load of pigs carried on the railway—130 miles—will cost about 3s. 3d. each for carriage, and the feed they eat would cost the same freight if carted the same distance.

These few calculations are based on actual feeding results, but by good husbandry and the use of as much by-products from the farm as possible, profits may be increased.

When finishing pigs off after they reach 18-20 weeks old, the use of the self-feeder must be discontinued. As the pig comes nearer maturity, the tendency to fatten is much greater, he becomes lazy and not having to exert himself to get all from a self-feeder, he fattens too easily. To overcome this, it is a good plan to feed the grain scattered about and make the pigs gather it in single grains, and then by working hard for less grain, the pigs grow more leggy and active, tending to reduce the fat.

A Young Tamworth Sow ''Hawkesbury Trix'' (Roseworthy Agricultural College).

SUMMARY.

1. Use only pigs for breeding of the long type, suitable for both local and overseas markets.

2. Use paddocks as much as possible, and make the paddocks comfortable for the animals with as much straw as possible.

3. Feed weaners separately from their mothers and feed heavily, remembering that a pig is only a converter of grain and waste products into meat, and time being the essence of the contract, get him sold as quickly as possible.

4. The most essential part of all is to cultivate the type of pig which sells best and this pig is only produced by watching the pigs and not feeding heavily shouldered and coarse pigs into bacon.

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EARLY BOOKING IS ADVISABLE.

Further particulars can be obtained from the Manager, Parafield Poultry Station, Salisbury, or Poultry Expert, Department of Agriculture, Flinders Street, Adelaide.

C. F. ANDERSON, Poultry Expert.

WHAT CAN WE DO TO AID THE DISTRIBUTION OF FRUIT IN OUR OWN STATE?

[R. A. Crammond, Lenswood and Forest Range.]

[*Paper read at the 46th Congress of the Agricultural Bureau of South Australia.*]

These are some suggestions that I would put forward to increase the consumption of fruit in a good market at our own back doors, and for convenience the subject will be dealt with from three aspects:—

First, as growers, it is essential to grow fruit of the best quality, then grade it and put it up attractively.

Good fruit must be graded to look its best, and it will naturally tempt consumers to purchase more. Good fruit also needs a clean case, not the nondescript boxes that are often seen in the market.

It is suggested that all cases should be sold with the fruit, and again sold by the fruit distributor to licensed case dealers, who would thoroughly clean, fumigate, and renovate them. Growers could then repurchase them and use them again, less the percentage of cases that were unfit for use. By this means there would be no distribution of disease in secondhand cases; this is an aspect that many growers do not appear to take into consideration. To see fruit offered for sale in dirty cases is no inducement for consumers to purchase it.

It Pays to Advertise.

Secondly, fruit needs advertising; it is Nature's own food, and why is it not proclaimed from the house tops? It is a recognised fact in the medical profession that people who have plenty of fruit in their diet suffer less from degenerative diseases, and that fruit materially assists in cases of high blood pressure. The Education Department could be asked to assist in advertising the value of fruit by instructing teachers to give lessons at least once a month on the advantages of fruit in the daily diet.

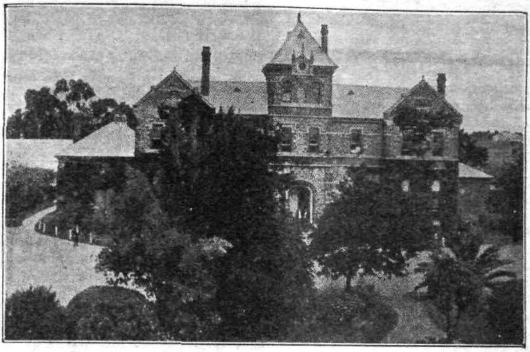
A big percentage of fruit consumers are not aware when the different fruits are in season, nor do they know how best to purchase them. Possibly a list could be published in the daily paper advising consumers when to buy, and a few short notes on each variety of fruit, so that they could purchase when the fruit was at its best. From market experience, growers know that many retailers do not purchase fruit for resale until the consumers ask for it, therefore it is the duty of the producers to encourage them to do so.

Who will pay for this? This has always been a sore point, but all orchardists should pay an advertising fee, which could be reckoned on an acreage basis—1s. per acre would represent £1 for 20 acres, and while it would amount to very little per case of fruit produced, it would give the scheme a start. This fee could be collected by district councils, who have all the necessary data at their disposal. A board of growers could decide how the money should be spent.

This board of, say, seven growers, would be elected from seven divisions or districts, so that the majority of growers would be represented.

Thirdly, South Australia is an agricultural and horticultural State, and as growers would thereby be making a genuine effort to help themselves, perhaps the Government would assist by taking steps to reduce the cost of transport, for this is one of the biggest hindrances to better distribution.

Expert evidence should be taken as to the crippling effect on producers of motor taxation, &c. A reduction in this tax alone would put many people in work, as it has done in other countries, and so create more consumers. Transport and *cheap* transport is the crying need of this country, and producers who require better distribution of their products should ask for more equitable treatment. Several bad markets are experienced immediately after motor taxation is due, often resulting in a reduction of 6d. to 1s. a case on hundreds of cases of fruit.



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THE CARE OF FARM HARNESS.

[By RUSSEL H. EIME (Blyth).]

[Paper read at the 46th Congress of the Agricultural Bureau of South Australia.]

This subject may not receive much attention from some farmers, who consider that so long as the harness remains intact and the horses pull the load everything is all right. However, a little care will mean a much longer life for harness, and will keep it better fitting by making the leather soft and pliable. Moreover, with good-fitting harness a horse will be able to work better.

Preserving Leather Harness.

The aims to keep in view when preserving are to have the leather soft and to provide a waterproof surface, the appearance naturally being enhanced. Not just any oil will do for dressing, because some oils are most injurious to leather. For the general harness, such as winkers, collars, dray saddles, spiders, back bands, and perhaps leather reins, use genuine neatsfoot oil, mixing with it a tin of fat black to every gallon of oil. Do not be misled and accept compound neatsfoot for the genuine article. Some farmers may object to the addition of fat black because of the black staining hands and clothing when handling, but this only happens for the first two or three days after oiling. The use of neatsfoot oil alone is not sufficient. It may have a preserving effect, but it does not waterproof the surface, and the preserving effect is lost without a surface.

Neatsfoot oil is naturally a thick oil, and in cold weather will not run out of the tin very easily, so that the mixing of fat black may seem difficult, but this is overcome by heating slightly. On no account must the oil be cooked. This mixture can be applied to the harness with a paint brush while it is warm, the oil soaking well into the leather. This method is better than using the mixture cold and rubbing it on with a cloth. All grit and dirt should be removed from the leather before any dressing is applied. One dressing of oil is not sufficient for the life of the harness. It should be oiled at least twice a year, and it is an ideal job for a wet day.

For dressing riding saddles, girths, and bridles use "Coacholene," following the directions on the tin. This preparation provides a waterproof surface, at the same time oiling the leather, and if applied properly will not come off on to the clothes. If so desired leather reins can be dressed with "Coacholene," because it does not leave a black stain. Folding girths should be packed with "Coacholene." It may be a little more expensive, but something good must be used to preserve the leather of a girth.

Storing the Harness.

All harness should be hung up on pegs in the stable or harness room. I prefer to hang the harness in the stable for convenience, but care must be taken to have the pegs high enough so that the horses will not knock down the harness, especially the collars and winkers, which, of course, would be hanging near the horse. The other harness should be on convenient pegs behind the mangers. Never allow pigeons to roost above the harness and soil it. All harness should be hung on the pegs, and not thrown from a distance of 10yds. or more.

Collars should never be stacked one against the other, on top of one another, or packed together on a rail. Provide a separate peg for each collar, and hang it with the lining outwards in order to give it a chance to dry. The hames may hang on the collar. A pair of winkers should also hang on the same peg as a collar, putting the winkers on last, otherwise the collar resting on the winkers

will damage the eye flaps. The same damage will result if the winkers are packed together on one peg. Dray saddles should not be hung one on top of the other, because twisting and straining of the leather, or damage to the lining, may result. They should either be hung with the peg in the channel or hung over the peg by the crupper strap.

Leather spiders and back bands may present a problem. It may not be practicable to bring them home each evening and store them in a proper manner. If they are left in the paddock over night cover them with a few bags in order to prevent dew, frost, or an over-night shower of rain settling on them. When they are not in use from day to day they should certainly be hung up under cover. Riding saddles when not in use should be under cover, and hung on a thin peg, resting in the channel. Be careful not to give a hack an opportunity to roll with a saddle on its back. Many saddle trees are broken when horses are allowed to run in the stable yard while saddled.

Fitting the Harness.

The fitting of a collar may present a difficulty, especially if it is newly lined, when it will appear to sit up on the horse's neck. Such a collar will soon pull into the shape of the shoulder. If in doubt measure the neck with a ruler; place the hand on top of the horse's neck with the arm horizontal, and measure vertically until in line with the bottom of the throat, being careful not to measure around the curve of the neck. If the collar is to fit properly it should be the same. When buying a new collar measure the horse in the above manner, and you will not be in doubt as to the size of collar to purchase. The careful fitting of a collar is important, for if it is either too large or too small sore shoulders will

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result. A collar that is too small will pinch the top of the neck, and may also scald the throat. Providing the collar is the correct size it must also be buckled on correctly, fitting neatly around the neck. A sore on the inside of the shoulder tells that it is fitting too tightly. On the contrary if the sore is on the outer edge of the shoulder the collar should be buckled a little tighter. Although these precautions are taken sores may still appear. The lining of the collar may need attention. Do not wait until it is torn or rotted before having it repaired. If the lining is found to be hard and flat have a saddler reline it.

The careful adjustment of the hames will also help to prevent sore shoulders. The hames should fit neatly around the collar. The draught should be neither too high nor too low. Needless to say, the same collar and hames should always be used for the one horse, because it is rarely that two horses have shoulders shaped alike. Should horses be troubled with sore shoulders have the collars relined, and when fitting observe the facts mentioned above, and the trouble should be greatly minimised. Whether rubber-lined collars will prevent sore shoulders or not I am not prepared to say, but care must be exercised to see that they fit correctly. The sweat must be washed from the rubber lining every morning with a damp piece of cloth; also, when oiling the leather of the collar be careful not to let it get on the rubber, for it is well known that oil and rubber are great enemies.

Winkers may also cause sores to the head when incorrectly fitted. They must fit neatly and be tight enough to prevent the horse from getting them off if he rubs against the next horse, but do not have the bit straining in his mouth. The forehead strap should meet the head strap just beneath the ears; not so low as to rub on the cheekbone and cause a sore.

If the dray saddle or riding saddle gives a horse a sore back it should be relined, and it is advisable to use a saddlecloth with the saddle. It is easier on the horse and saves the lining of the saddle. Be careful in the adjustment of the girth of the riding saddle, especially the split girths. If the tension on all buckles is not the same the girth will pinch, and girth galls may be the result. To prevent any likelihood of this use a folding girth with a steel ring at each end and with straps sliding through it which buckle on to the saddle. With this type of girth the tension must be even although one strap may be higher than the other.

When using leather spiders and leading chains see that the spider rests on the horse's rump and not half way up the back. Adjustments can always be made. The belly band should be just behind the front legs, but not so far forward as to cause chafing. The spreader used with leading chains, and the swingletree with the abreast team, should be wide enough to prevent the chains squeezing the horse when pulling. The chains should never be twisted; if so they will chafe the animal's sides, and a horse with uncomfortable harness cannot be expected to do his best.

Repairing.

However much care is exercised with harness some breakages are inevitable. A box of copper rivets is at times very handy for effecting the necessary repairs. Do not use them on any tight-fitting harness such as girths and some parts of the winkers, which should be stitched. Suitable repairs can be made with copper rivets in the case of couplings, leather traces, spiders, breeching supports, and the loose-fitting parts of winkers. If the eye flaps of the winkers become bent out, a strip of thin leather riveted from each flap to the centre of the forehead strap will hold them in position. I would not advise a farmer to attempt the relining of any of his harness. That is a job for a tradesman; the shaping of the lining is important, and must be done correctly.

If farmers in their own interests will treat their harness in the manner outlined above it will last almost indefinitely, and horses will do their best because they are fitted with comfortable harness.

STATE OF SOUTH AUSTRALIA.

VARIETIES OF WHEAT SOWN, SEASON 1934-35.

[A. W. BOWDEN, Government Statist.]

The Acting Government Statist reports that 183 (186) varieties of wheat were sown for the wheat crop of the season 1934-35. The total acreage sown for grain, hay, and fodder was 3,459,380 (4,074,417), of which the varieties were not specified for 106,676 (102,941) acres.

Particulars of the 16 most popular varieties are given at foot hereof. Nabawa occupies first position for the fourth year in succession, but its proportion to the total sown is lower than previously. Ranee (a good flour wheat) and Gallipoli retain second and third positions respectively, with Ranee showing an improved percentage and Gallipoli receding slightly. Sword has made a decided advance, rising from eighth to fourth place, with a corresponding improvement in percentage. Of the remaining leading varieties, Waratah, Ghurka, and Dan show slight advancement in ranking and percentage, while Gluyas, Ford, Late Gluyas, Currawa, Federation, and Sultan have all dropped back slightly.

The leading varieties favoured in each of the divisions and their percentages to the total were:—

Central.—Sword, 18; Nabawa, 17; Ranee, 11; Ford, 9; Waratah, 8; Gallipoli, 4.

Lower North.—Ranee, 17; Nabawa, 16; Sword, 14; Ford, 9; Waratah, 7; Gallipoli, 7.

Upper North.—Ranee, 40; Nabawa, 19; Federation, 8; Gallipoli, 5; Waratah, 4; Gluyas, 4.

South-East.—Gallipoli, 40; Ranee, 10; Ghurka, 9; Ford, 8; Sword, 4; Nabawa, 3.

Western.—Nabawa, 26; Gluyas, 13; Late Gluyas, 11; Waratah, 10; Ford, 6; Ranee, 5.

Murray Valley.—Gallipoli, 22; Nabawa, 20; Ranee, 15; Gluyas, 6; Waratah, 3; Silver Baart, 3.

Sixteen Leading Varieties of Wheat Sown, 1934-35 *and* 1933-34.

Kind of Wheat.	Total Area Sown for Grain, Hay, &c.		Percentage to Total.		Relative Position.	
	1934-35.	1933-34.	1934-35.	1933-34.	1934-35.	1933-34.
Nabawa	682,464	915,520	19·73	22·47	1	1
Ranee	495,175	432,771	14·31	10·62	2	2
Gallipoli	295,503	398,496	8·54	9·78	3	3
Sword	277,715	105,494	8·03	2·59	4	8
Waratah	241,559	251,450	6·98	6·17	5	6
Gluyas	219,069	385,311	6·33	9·46	6	4
Ford	214,317	264,970	6·20	6·50	7	5
Late Gluyas	125,936	170,966	3·64	4·20	8	7
Ghurka	68,232	40,107	1·97	0·98	9	16
Currawa	57,370	100,056	1·65	2·46	10	9
Dan	57,350	58,157	1·65	1·43	11	13
Federation	48,401	94,872	1·40	2·33	12	10
Sultan	47,765	66,417	1·38	1·63	13	11
Aussie	45,835	52,653	1·33	1·29	14	14
Merridin	41,109	28,277	1·19	0·69	15	21
Felix	39,606	60,053	1·15	1·47	16	12
Other and unspecified	501,974	648,847	14·52	15·93	—	—
	3,459,380	4,074,417	100·00	100·00	—	—

In commenting on the above, Mr. R. C. Scott, Supervisor of Experimental Work in the Department of Agriculture, states:—"The committee for the improvement of the standard of wheat in South Australia suggested that three of the above varieties, viz., Gallipoli, Waratah, and Ghurka, should, wherever possible, be eliminated from the wheats planted in South Australia on account of their low milling qualities, which is depreciating the value of our wheat overseas."

SOUTHERN DISTRICTS HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR AUGUST, 1935.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.			Average Test.
			Per Herd during August.	Per Cow during August.	Per Cow March to August.	Per Herd during August.	Per Cow during August.	Per Cow March to August.	
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	%
9A ..	28	23·81	15,790½	563·36	2,406·06	843·63	30·09	124·95	5·30
9/C ..	14·03	10·77	7,805	556·30	2,625·27	348·17	24·82	111·54	4·46
9/D ..	29·42	23·68	10,551½	358·65	2,553·91	643·12	21·86	141·19	6·09
9/E ..	13·97	5·87	3,875½	277·41	2,312·15	193·37	13·84	112·85	4·99
9/F ..	17·48	15·81	10,252½	586·53	2,586·48	467·61	26·75	114·81	4·56
9/G ..	24·87	14·94	12,401	489·63	2,528·17	627·74	24·76	131·14	5·06
9/I ..	28·48	23·55	17,379½	610·23	2,384·32	737·97	25·91	103·36	4·25
9/J...	18·29	16·13	12,013½	656·83	2,323·81	526·24	28·77	99·91	4·38
9/L ..	27·48	21·74	12,488½	453·79	2,076·30	513·18	18·63	84·70	4·10
9/O ..	28·61	18·10	12,185½	425·91	2,338·69	559·61	19·56	110·26	4·59
9/P ..	44·48	41·68	25,308	568·97	2,270·70	1,295·00	29·11	115·41	5·12
9/Z ..	11·90	10·81	4,093½	343·99	1,803·91	190·84	16·04	87·27	4·66
9/W .	28·71	20·77	18,999½	661·77	3,402·71	745·82	25·98	144·90	3·93
9/X .	9	7·58	4,429	492·11	2,282·56	218·64	24·29	117·15	4·94
9/Y ..	10·29	9·29	5,887½	572·15	2,611·67	247·03	24·01	106·08	4·20
9/T ..	15·16	7·39	5,719	377·24	1,925·07	285·44	18·83	88·75	4·99
9/Aa .	15·16	14·29	8,735	576·18	2,567·60	454·44	29·98	142·29	5·20
9/Bb .	24·06	16·52	9,999	405·85	1,677·19	492·63	20·75	87·47	5·14
9/Cc .	18	17	11,361½	631·19	2,933·15	589·30	32·74	152·17	5·19
9/Ff .	19	13·97	6,621	348·47	900·66	248·29	13·07	33·23	3·75
9 Ee .	43	31·77	12,541	291·65	1,260·29	578·27	13·45	64·05	4·61
9/Dd	17	12·90	4,424	260·23	1,127·59	219·46	12·91	57·47	4·96
Means	22·11	17·24	10,584·59	478·75	2,280·57	501·17	22·67	110·34	4·73

NARRUNG HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR AUGUST, 1935.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.			Average Test.
			Per Herd during August.	Per Cow during August.	Per Cow October to August.	Per Herd during August.	Per Cow during August.	Per Cow October to August.	
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	%
5/C ..	36	36	29,450	818·05	5,845·14	1,569·29	43·59	306·84	5·33
5/D ..	32	29·26	20,901	653·17	5,054·06	1,106·86	34·59	270·81	5·30
5/E ..	34	25·35	15,921½	476·21	5,160·51	830·59	24·87	267·55	5·24
5/R ..	70·48	63·77	48,475	687·87	4,927·57	2,211·20	31·38	221·40	4·56
5/Ee .	20·77	13·74	11,774	566·87	4,608·23	557·75	26·85	233·34	4·74
5/Z ..	29·65	27·39	25,782	869·54	8,190·41	1,392·24	46·96	429·66	5·40
5/Ww	20	17	13,144	657·20	5,2[illegible]2·05	612·77	30·64	245·19	4·66
5/Xx	19·90	18·94	12,693	637·84	4,858·35	636·71	32·00	252·00	5·02
5/Yy	11	10·19	6,773½	615·77	4,636·69	340·78	30·98	235·28	5·03
5/Aaa	19	16·55	12,006	631·89	5,138·55	617·53	32·50	254·51	5·14
5/Bbb	17·29	12·74	7,899	456·85	3,562·21	393·32	22·75	178·85	4·98
5/Ddd	28	25·68	26,538½	947·80	8,414·11	1,153·57	41·20	350·07	4·35
5/Eee	26	22·35	14,870	571·92	6,796·34	685·73	26·37	306·53	4·61
5/Fff	8·65	5·71	4,715	545·08	3,586·86	191·96	22·19	162·94	4·07
5/Ggg	9	4·74	2,369½	263·28	4,570·33	106·46	11·83	214·34	4·49
5/Hhh	18	13·10	9,348½	519·36	6,020·40	387·51	21·53	244·10	4·15
5/Iii .	17	11·61	4,748	279·29	1,934·41	254·25	14·96	112·15	5·35
5/Jjj	26·29	26·29	20,528½	780·85	3,635·61	1,156·20	43·98	193·53	5·63
5/Kkk	20·19	19·03	8,650	428·43	2,351·62	402·06	19·91	107·94	4·65
5/Aa .	21	18	10,726	510·76	2,150·92	446·35	21·25	96·33	4·16
5/Lll	10	10	8,447½	844·75	—	397·21	39·72	—	4·70
Means	23·53	20·35	1,503·62	638·91	5,572·99	735·73	31·26	270·13	4·89

LAKE ALBERT AND JERVOIS HERD TESTING ASSOCIATION (formerly Lake Albert).

RESULTS OF BUTTERFAT TESTS FOR AUGUST, 1935.

Herd No.	Average *No. of* Cows in Herd.	Average *No. of* Cows in Milk.	Milk.			Butterfat.			Average Test.
			Per Herd during August.	Per Cow during August.	Per Cow December to August.	Per Herd during August.	Per Cow during August.	Per Cow December to August.	
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	%
6/B ..	17	16·35	15,295½	899·73	4,048·25	742·05	43·65	200·88	4·85
6/C ..	21·61	15·65	17,320½	804·20	4,381·51	710·60	33·02	187·96	4·08
6/Y ..	13	6·55	2,666½	205·11	3,111·92	111·49	8·58	131·43	4·18
6/Ff .	28·48	19·16	12,937	454·24	5,030·14	556·97	19·56	211·42	4·31
6/Kk	18	14·58	6,587½	365·97	3,894·52	315·12	17·51	154·70	4·78
6/Ll .	23	13·23	6,932	301·39	3,755·49	255·81	11·12	140·09	3·69
6/Oo .	26·19	18·90	12,920	493·32	5,168·35	560·61	21·41	223·06	4·34
6/Ss .	19	15·19	13,692	720·63	6,616·76	492·37	25·91	256·16	3·60
6/Tt .	24	17·42	13,530½	563·77	5,555·42	575·11	23·96	234·89	4·25
6/Vv .	30	27·87	21,919½	730·65	6,120·39	1,022·34	34·08	286·70	4·66
6/Xx	27	21·55	13,470½	498·91	5,528·62	574·06	21·26	225·35	4·26
6/Ccc	25	14·10	8,637	345·48	3,529·41	356·49	14·26	155·26	4·13
6/Ddd	24·68	13·26	10,385	420·78	4,316·08	405·19	16·42	189·22	3·90
6/Jjj	24·58	18·71	14,139½	575·24	5,659·06	656·93	26·73	269·49	4·65
6/Mmm	7·58	7·58	5,073½	669·32	6,126·62	249·69	32·94	277·84	4·92
6/Nnn	35·45	22·35	15,600	440·06	4,704·55	663·67	18·72	206·54	4·25
6/Ooo	25·19	22·81	19,468	772·84	2,917·34	848·21	33·67	122·77	4·36
6/Ppp	20·29	19·13	18,254	893·44	2,810·41	736·06	36·03	114·79	4·03
6/Qqq	16	13·77	16,532	1,033·24	2,263·15	652·63	40·79	85·83	3·95
Means	21·42	16·75	12,913·71	575·90	5,013·23	551·86	24·61	215·25	4·27

THE HILLS HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR AUGUST, 1935.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.			Average Test.
			Per Herd during August.	Per Cow during August.	Per Cow July to August.	Per Herd during August.	Per Cow during August.	Per Cow July to August.	
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	%
7/H .	9	8·45	5,301½	589·06	1,120·56	270·12	30·01	58·07	5·09
7/P ..	29·19	24·94	17,846½	611·39	1,131·11	858·59	29·41	55·44	4·81
7/Tt .	17	15·35	11,753½	691·38	1,324·03	512·25	30·13	57·71	4·36
7/Bbb	82·19	63·71	42,325	514·96	1,015·47	1,937·79	23·58	46·09	4·58
7/Ddd	12	11·42	9,390½	782·54	1,525·83	448·69	37·39	72·02	4·78
7/Eee	13·71	12·29	8,085	589·71	1,215·13	419·66	30·61	61·52	5·19
7/Ggg	13	8·48	4,049	311·46	712·07	211·45	16·27	35·18	5·22
7/Hhh	12	3·39	1,720½	143·37	364·99	56·56	4·71	12·77	3·29
7/Iii .	18·84	6·03	5,748½	305·12	674·65	201·95	10·72	23·83	3·51
7/Kkk	25	19·13	13,767½	550·70	965·47	645·10	25·80	46·80	4·69
7/Mmm	12	9·45	5,621	468·41	928·53	295·99	24·67	50·73	5·27
7/Nnn	16	13·39	10,437	652·31	1,350·74	445·80	27·86	58·86	4·27
7/Ooo	21	16·84	8,891½	423·40	882·09	396·16	18·86	39·13	4·46
7/Ppp	18·68	18·48	9,809½	525·13	1,037·45	463·31	24·80	51·38	4·72
7/Qqq	20	17·19	13,764½	688·23	1,278·71	623·01	31·15	59·17	4·53
7/Rrr	20·13	15·10	10,799	536·45	874·99	480·69	23·88	38·22	4·45
7/Sss	10	8·19	7,140½	714·05	1,342·26	308·81	30·88	58·64	4·32
7/Ttt	8	7·87	5,282½	660·31	1,243·49	220·53	27·57	52·60	4·17
7/Uuu	22	17·23	10,529	478·59	—	436·15	19·83	—	4·14
7/Vvv	19·84	15·29	10,857	547·23	—	477·86	24·09	—	4·40
Means	19·98	15·61	1,065·60	533·36	1,039·31	485·52	24·30	47·73	4·56

PAPERS READ AT CONFERENCES.

SOUTHERN BRANCHES, MOUNT COMPASS, 15th AUGUST, 1935.

MAKING THE MOST FROM A SMALL HOLDING.

[W. F. ROADS, Inman Valley.]

At the present time it is difficult to be sure which line of business to practise on a small holding, say, up to 120 acres. Dairying has always been recognised as the best line to follow on a limited acreage, but in the last few years the ewe and lamb, given the same feeding of meadow hay and rotational grazing and attention to keep the ewes on an even line of feed all the year round, has in this district resulted in several instances in three and four lambing ewes being averaged per acre, and the prices realised for wool and lambs have seriously challenged dairying on any land, intense culture or otherwise. One person can easily look after the sheep, as against about three persons to attend to cows and pigs, etc.

The Jersey cow, with its ability to produce butterfat over a long period, and being economical to feed and rear up to producing age, and to keep up production to a big age with a minimum of failures, will go close to making a small holding a good line of business. Providing one could be assured of 10d. to 1s. all the year round, with the land laid down to good pastures and fodders and heavily topdressed (3cwts. if possible), a well managed dairy farm would "check up" pretty well, what with the sale of surplus stock and a fair supply of bacon pigs to place on the market at intervals.

Whatever line of production is decided upon, the conservation of a large amount of fodder and topdressing is the only way to be sure of success. To get the most from the land the bulk of the food supply, if not the whole of it, must be grown on the property. In this district some dairymen stake too much on clover hay as a sole ration for milking cows. It is a grand fodder, but in the winter months cows that are heavy producers begin to lose flesh, and later on fall away in production. To overcome this, a few acres of oaten hay will do wonders to keep up body fat, and so obviate purchasing grain. A good practice is to break up a pasture that is getting "sick," crop it for two years, and lay it down again and continue on the same lines with another paddock.

A good stack of silage will save the bran bill every year. A good stack of meadow hay and another of oaten hay, with a paddock of maize, another of Japanese millet or Sudan grass, plus good pastures, will keep a cow up to a good production right through, and nothing need be purchased outside at all. If concentrates of any kind have to be purchased, unless the herd is of a very high standard the cows will not give a good return above costs of production.

As regards pigs on the holding, there is no feed to approach skim milk for quick growth from suckers and right up to the finish off for sale. Three good sows will about keep up the supply of pigs, and 1 acre of mangolds and a patch of chou moellier will three parts keep three sows and a boar all the year round. A mistake with sows is often made by giving them too much feed when dry, thus causing poor litters to be produced later on. As many potatoes as can be grown in conjunction with other work should be planted every year, as they will prove a fair source of revenue in the long run.

I strongly advocate as much subdivision as possible, and to arrange for water in most paddocks. After the clover has dried off and the cattle have given the land a fair clean up, purchase a line of store lambs and put them on to clean up all top seed, etc. The seed would otherwise be wasted, the land is left in first class condition for an opening rain, and a line of fat lambs will have been produced.

To sum up in brief:—

Test all cows and keep only the very best and youngest of these, with a few choice heifers coming on later, and replace the outed cows with a certain number of ewes for export lamb breeding. Keep about three or four sows and a boar of the right type for baconers.

Topdress to the limit of your finances.

Store both meadow hay and silage, which will feed sheep or cattle.

Do not forget a paddock of oaten hay for early green feed and later for good hay. Grow several kinds of summer fodders to follow on in rotation, also a plot of potatoes if possible.

By keeping a good herd of young cows on hand it will be possible to change to dairying should the industry come into its own again.

EXPERIENCES OF SCRUB CLEARING AT MOUNT COMPASS.

[J. H. SNEYD, Mount Compass.]

In giving one's experience of scrub-clearing, it is difficult to make it of general interest, because so many of the practices adopted with success on your own property are not applicable to even the next door neighbour.

My property consists of 800 acres of undulating ground, carrying low stringybark scrub, with a percentage of good flats, green in summer. Taken over six years ago, the property was all scrub, unfenced other than the boundary. It carried no stock. To-day 600 acres are cleared and carry 700 sheep and 40 head of cattle, with every prospect of turning off 500 lambs this year.

The method of clearing has been the same over the whole area, *i.e.*, rolled in summer, the scrub left lying as long as possible, burnt in April, and ploughed in the autumn and early winter, left fallow until the following February, ploughed again, harrowed down, then seeded with a hoe-drill with light harrows behind. The implement that has been used for ploughing has been a Sundercut, set over as far as possible, so that it would pull out the maximum number of stumps. It is interesting to note that the majority of landholders who a few years ago were trying to establish pasture without ploughing have now reverted to the former method. The mixture sown on the average has been 2½lbs. Subterranean Clover, 1lb. Cluster Clover, and different combinations of grasses.

One of my earliest mistakes was in sowing grasses and clovers unsuitable for this district, *e.g.*, Sheep's Burnet, Alsike Clover on high ground, Commercial Perennial Rye Grass, lucerne; and on raw ground, Cocksfoot. These do not give results commensurate with their cost. Some of the most useful grasses and clovers are *Lotus Major*, which gives exceptional results in wet boggy places. Paspalum is well worth seeding on either high or low ground. Kikuyu is worth considering, and responds wonderfully to a dressing of cow manure.

Clustered Clover is a splendid clover, and for sowing on ironstone rises is preferred to Subterranean Clover, as it is far hardier, gives a good bulk of feed the first year, and improves the ground, so that eventually Subterranean Clover can be introduced with success; 1lb. per acre is a good seeding. Good results have been obtained with ½lb. per acre.

Fog Grass: Everyone knows of this, and for either high or low ground it is hard to beat. Chicory gives quite good results. *Phalaris* is not worth bothering about for a few years; it is hard to establish. For sowing an area of new ground I recommend 3lbs. of Subterranean Clover, 1lb. Clustered Clover, and 4lbs. Fog Grass. This mixture was sown with only 2½lbs. Subterranean Clover, together with a cover crop of Algerian Oats on 200 acres of ground that had been fallowed for 18 months and had the best results I have ever had. There is no doubt fallowing pays—the longer it is left turned over, within reason, the better.

None of the foregoing grasses and clovers do well without superphosphate. The first year use 2cwts. per acre; in fact, 3cwts. would not be wasted. The second year 1 bag per acre, and after that as much as can be afforded. In applying the superphosphate use the box-type spreader. It is slower, but makes a far more even job than the spinner. Graze lightly the first year to give the pasture a chance to seed itself.

It is surprising the opinion that many people living outside this district have of Mount Compass. Many believe it all hungry white sand, suitable only for kangaroos. Results already obtained in this district should alter their opinion. It is often said in reference to this dstrict that one wants a small fortune to do any good. It is peculiar that there have been instances here of men with practically unlimited capital who have not made a success of their properties, whereas some of the best properties are owned by men who have started with nothing and have had to make money off their properties before they could spend it.

On the remaining 200 acres of scrub 160 wethers are grazed, changing them in and out of the scrub on to the grass. Although the wethers are by no means fat, they are in good strong condition, and they cut light fleeces of very attractive wool. Last year it was sold for 15½d. a lb. These wethers give some return from the scrub land. The value of the scrub as roughage for stock cannot be overestimated.

The grubber plays an all-important part in clearing scrub in this district, because no matter how well the land is cultivated, you always have Yacca and Titree to grub afterwards, as well as shoots to knock off. Another point to consider is the provision of hay paddocks. These are absolutely necessary, and the sooner one grubs an area in proportion to the size of the farm, the better.

In conclusion, I would like to comment on the wonderful way in which the older established settlers in Mount Compass go out of their way to assist any new comer who goes to them for advice. Things are pointed out at once, which have taken them years of experience to find out, and it must have saved many new settlers many pounds besides preventing them from starting out on wrong lines.

SUGGESTIONS FOR GREATER CONTROL OF NOXIOUS WEEDS.

[F. C. KEEN, Port Elliot.]

The time is long overdue when more serious attention should be given by all Governments to staying the spread of noxious weeds. The Agricultural Journals and Gazettes, as well as the leading daily papers of nearly all States, have given much space to the consideration of this serious question, yet the weeds continue to spread. The latest effort of the New South Wales Government is to offer a large sum of money to the person or persons who can find a practical method of destroying Skeleton Weed, that has threatened ruin to some of the best agricultural land.

In all States many of the older settled parts have one or more useless weeds. If greater precautions are not taken by settlers in new country, weeds will surely find their way into every settled part. The agents for distributions are so many, and stock are moved so quickly and such long distances, that it is a simple matter for a new district to be invaded. Skeleton Weed was not taken much notice of on its first appearance in New South Wales. To-day it is an enemy proving to be a great misfortune to agriculturists.

For new districts the matter of importance is that these weeds be recognised early and destroyed or reported. If children knew more about weeds they could help in the reporting or destruction of these enemies. Even in the city, the park lands and vacant allotments would not grow any new noxious weeds if school children were taught the importance of recognising or destroying useless and dangerous plants. For many years the Agricultural Departments of the various States—through their Journals—have illustrated many of the weeds and methods of destruction. This information

could be made still further use of, if the State Agricultural Departments pooled all the illustrations in their possession with the information regarding same. This matter is of sufficient importance for the Commonwealth Government to be asked to bear the expense of compiling a "Noxious Weed Reference Book" suitable to all schools in the Commonwealth, and it would help boys and girls to grow up in a knowledge of the inconvenience and danger that can be caused by allowing noxious weeds to go unnoticed.

These weeds spread slowly but surely. The great aim should be, first to stop the spread of the weeds already established in older districts, to new areas, and secondly, to keep watch for suspicious plants, and not to allow new varieties to get a hold. Children can be helping agents in the war on noxious weeds. Why not let them help? They also will reap the benefit. This matter is of sufficient importance to ask the Advisory Board to request the combined Governments of the Commonwealth to unite in an endeavour to publish a "Noxious Weed Reference Book" for the use of the Education Departments of all States of the Commonwealth.

HOW TO MAKE FARMING PAY.

[H. A. Eckert, jun., Belvidere.]

Anyone with free land and a useful banking account, say £100, may hope, even with these continuous bad times, to keep his head above water, but to those who are unfortunate enough to be handicapped with big mortgages, low rainfall and long-distance freight, their best plan would be to give up farming.

Coming back to conditions in the Belvidere district, which includes handy markets and shorter freight, a useful if patchy rainfall, and fairly good country, it may perhaps be possible to profitably pursue a system of mixed farming. Undoubtedly there are several farmers who, with a useful inheritance and great physical and brain capacity, are more than holding their own. More are stationary and probably some are slipping back.

Looking at the world's position at present and for some years past, it seems that farmers must give that great industry that they have always so much looked upon as a hobby and livelihood, namely, "wheat growing," considerably less thought than before. The lamentable price is no inducement for them to continue. Growers have held on with much hope for so long that at last they must admit that with the utmost economy and best production they cannot even possibly hope to make it pay. Therefore they must turn their attentions elsewhere.

Australia's world-wide reputation for wool and more latterly for lambs will naturally turn attention to sheep. Their returns are more continuous, the expenditure less, and the labour more congenial. However, care must be taken to restrict outputs to something like world requirements. Cows are a standby that is at times very useful, if not altogether payable. In conjunction with pigs they are worth some consideration, and no farm would be complete without a flock of fowls, from which farmers should strive to have enough to pay the grocery bill.

To turn attention more to stock will require more attention being paid to pastures and fodder. In trying to detect the best farmers' methods, one finds without exception that they have good stacks of hay. Always, even in drought times, they have more than ample for their own requirements, and are never afraid to cut those acres of their crops that would produce the golden grain. Hay is a wonderful standby, and ensilage—although so frequently given prominence—appears to be rather beyond local conditions. It has never been practised with anyone in this district with success. However, oats and other grains can be stored cheaply and effectively for tiding the stock over the dry and troublesome April to July period.

The later practice of sowing fodder for stock has met with general success, if sown early on light soil, for the first and most useful picking, and a crop sown on the firmer soils, which will continue to thrive in the winter months, will be equally

effective. A little barley sown early on light soil will give good results; the same applies to oats. However, taking the whole of the winter and spring period into consideration, oats are easily the best. From the cereal crops farmers must try to get the best results from stubble with more oats and barley. Stubble feed may quite truthfully be said to be worth double.

A crop of peas makes wonderful feed for all classes of stock, and will provide a good field for early greenstuff to follow on; it will improve pasture land with less expense and more benefit than any other crop, and in the event of a revival of wheat prices, the land would be almost equal to fallow. Particularly is the pea crop valuable for enhancing stock-carrying capacity. Peas are easily and cheaply grown. Land ploughed in June and sown with 60lbs. or 70lbs. of super., together with 70lbs. of seed, will return a big growth of straw, which if not reaped for grain will make excellent feed if raked into rows before the straw is discoloured. The latter is one of the chief faults with peas; the straw generally discolours when the grain ripens, and it is imperative that they be raked into rows, preferably in the morning before the straw is too brittle. They will be ready to stack immediately, if anyone has the time and sufficient labour.

One of the chief objects, if farming is to pay, is to utilise every minute to the best advantage; try to do any work in what is called slack time, and so save time in the busier periods of the year.

Much can be accomplished in this way in the destruction of rabbits and noxious weeds. Overhaul machinery, wells, and windmills and erect feeding conveniences for stock, fences, &c., all of which will dissipate valuable time if it has to be contended with during seeding or harvest. There are many valuable points to be learnt about stock on farms, many of which will only come by hard experience. The first necessity is to find out what stock can be kept comfortably. Overstocking is a burden, and understocking a waste. Breeding one's own stock pays best. Even if a certain class of stock becomes unprofitable, it is always advisable to keep enough on hand to breed back should the market take a turn for the better. By having the farm rather understocked, one may be able, with a little judgment, to turn over almost any class of stock at a profit, but by not having sufficient feed one would have to be down to the same basis as a dealer and rely solely on brain work and judgment.

It is impossible to make farming pay without wide experience, efficient plant, effective marketing, funds to work on and 12 hours each day of hard and brainy work, and living with the strictest economy.

TREES FOR SHELTER AND TIMBER FOR INMAN VALLEY AND WAITPINGA.

[J. W. Crompton, Port Elliot.]

In these districts there is a very large proportion of land that will not grow more than a limited variety of plants. The cause of this is mainly the tightly packed glacial clay or the proximity of solid rock to the surface, which latter is usually a less limiting cause.

Shelter from plants seems always to be preferred to artificial shelter by stock. Trees as a rule do not make such good shelter in cold weather as hedges. Any farm animal will get under the lee of a hedge that is dense to the ground and high enough, in preference to a tree that is not dense to the ground. The ordinary tree only reduces the force of the wind some distance to leeward; there is draught under trees. Therefore a patch or belt of trees with a hedge to windward has a greater shelter value than trees dotted about, both in cold and hot weather.

Moreover, trees so much reduce pasture growth and crops that it 's advisable to have patches of trees and full areas of absolute clearing. A flock of sheep will often crowd into the shade of one tree, although there is another tree 100 yards away. If there is a patch of trees the flock spreads in comfort in hot days, and in cold weather they will get more shelter near the lee side of a patch and more still near a hedge.

If protected, Budlea and Wormwood make very good hedges. Both are frostproof. Wormwood seems capable of growing on almost any soil, but it prefers sand. Budlea, however, prefers loose soil. Where subsoil and climate are suitable, it only needs protection for about 10 years. After that it would stop a bull, and its height and overhang make it ideal

Bamboos are very good and make a useful growth almost anywhere. The ordinary White Spanish bamboo grows well on alluvial soil and the Variegated grows more dense than the White on sandy slopes. It is denser down low, but not so tall. Bamboos, however, need permanent protection, and they have a food value. A belt of native scrub with Yaccas will supply a very good shelter in both cold and hot weather. As a rule, ewes and lambs avoid it for fear of foxes, and like other hedge plants, the animals will ultimately kill all undergrowth.

THE PINES.

Of the evergreen imported trees suitable for cold and wet weather the pines seem to be easily the best, though olives might be tried. Olives must be protected; they are slower to grow, and only limey soils are suitable. I have tried Canary, Aleppo, and Maritime, but the *Insignis* is perhaps the best of all. The Maritime is a little slow at first, but very hardy. The Canary Pine is a handsome tree and long liver. It grows very slowly for many years and does not spread.

The Aleppo is common to almost the whole of the State. It needs a warm climate and a deep moist subsoil, and under these conditions it is a beautiful long-lived tree. It is a better timber tree, and better for firewood than *Insignis* or Maritime.

The Cypress is similar to the Aleppo as timber and lives long. It has dense foliage, but grows slowly.

Insignis and Maritime timbers are very much alike and are useful for butter and fruit boxes and where a non-splitting wood is wanted. They both have a tendency to shrink and lack the ability to stand weather. Canary Island pine produces an extra strong and good timber. It is even stronger than Oregon.

Another evergreen that is especially suited to saline sand is the *Lagunaria*. It grows well on the coast. The Norfolk Island Pine has an attractive appearance, but is not suitable for shade when young. These pines need a lot of care and water for the first few years.

Deciduous trees are not necessarily the best shade trees, but they allow the sun to filter through when warmth is wanted and are very suitable for planting on the eastern or south-eastern side of sheds and yards.

There is a very large variety of these that suit alluvial soil, but there are few that will do on a tight subsoil. For bad subsoil the pear will often grow to a big size and provide good shade. Select a strong-growing variety and plant the graft joint well below soil level. If on the farm there is a patch of wet land and the water is not required the risk of sheep-worms and fluke will be reduced if it is drained. Establish a pear tree on that spot and it will be dry for most of the summer. If the wet patch is too large for a pear tree a patch of Cork Elms might be excellent. Do not plant these trees near a garden, but only where animals can keep the suckers under control.

English Elms would do instead, but they are not so hardy and neither will they stand heavy sea winds. Weeping willows will make good growth if the wind is well broken. These three are all fodder trees.

The Elms are mentioned as suckering, but this can be greatly reduced by growing them from cuttings that have had all buds below the soil carefully cut off before planting. Elms should be planted in the corners of yards, especially sheepyards. They make a remarkably dense shade even when very young, the timber is a tough non-splitting useful wood, and the tree lives for hundreds of years.

In very many cases the native tree that originally grew in that exact locality is the best tree to plant or to keep. The best of the local trees for this is the Bluegum, but Scrub Stringy has grown from a seedling to 1ft. in diameter in 20 years.

[*Papers Read at Conferences.*]

HILLS BRANCHES, LENSWOOD, 22nd AUGUST, 1935.

ESTABLISHING A DAIRY FARM IN THE HILLS DISTRICT AND SOME OF THE COSTS PERTAINING THERETO.

[J. C. BLAKELY, Cherry Gardens.]

Much of the land in the Hills Districts in its natural state carries heavy Blue Gums on one slope, heavy Stringy Bark on the other elevation, with big Red Gums on the lower slopes and flats, and with no scrub. This land does not produce a milk producing fodder even during the best seasons of the year but it provides a hard, fibrous roughage, which is beneficial to stock that have access to succulent feed such as clover, rye, *Phalaris tuberosa,* Kikuyu grass or ensilage.

The Blue Gum land is hard on the surface with the clay not far below, and with a percentage of small iron-stone quartz. The Stringy Bark ground has a decided advantage over the Blue Gum. The surface is looser with a fair thickness of mulch, no doubt brought about by the more fibrous and softer nature of the bark, which during centuries has allowed it to decay and form a very valuable depth of surface mulch. This surface mulch is essential to the establishment of Subterranean Clover, which should always be the pioneer crop in any pasture establishment, owing to its ability to enrich the soil with nitrogen. The nitrogen content of virgin Stringy Bark land is not altogether negligible as it is in Blue Gum, owing to the mulch containing what is known as scrub or organic nitrogen.

The most economical way to clear the land is with a 25-ton monkey grubber costing £34, pulling the trees over. Arrange with a reliable wood carter with a large lorry, and give him the wood. Draw up a contract for the wood to be cut and neatly stacked and carted from the property within a given time; the carter to put up a cash deposit, the deposit and any wood remaining over the stated period to be forfeited by him and retained by the land-owner for non-fulfilment of the terms of the agreement. Do not cart the wood yourself. A holding cannot be developed while carting with a small lorry.

The removal of the stumps and the filling in of the holes will entail a fair amount of time and labour. The burning of the stumps and tops should be done with care so that no great heat will be created on any one spot; having this point in view the stumps must be sleighed to one spot for burning, preferably some hole or hollow such as an old saw pit.

Two good horses each costing £15 will be required. The ground is now ready for the spring tooth cultivator, costing £6. The cultivator should be put down to work the ground crossways to a depth of 2in., the cultivating being done as early as possible to enable sowing early in May, applying 2cwts. of super and 10lbs. of Subterranean Clover per acre. This should be lightly harrowed with the back of the harrows only. The above method is essential with Blue Gum ground, whereas it is possible on Stringy Bark ground with a good surface mulch to establish clover without cultivation.

In the second year, apply 1¾cwts. super per acre, third year 1½cwts., and 1cwt. super per year thereafter. The cost of super and seed for the first three years will be 25s. per acre.

Six lambing ewes were carried per acre for five months on one plot. It is in its fourth year, and the nitrogen content of the soil is now sufficient for further progress in the pasture scheme; that is;the introduction of Perennial Rye and *Phalaris tuberosa.* A good way to tell if the clover paddock is ready for rye is by the growth of Soft Brome, &c.

Purchase stock when feed is available and the increase of feed must be there before the herd or flock is added to. Do not look upon the feed in the spring or flush of the season and measure the herd by it, or they will fail during the lean months There is only one way to economically handle the pasture and that is to feed closely

[*Papers Read at Conferences.*]

while in its early growth, closing certain paddocks off early in September for hay and ensilage.

A mowing machine costing about £30 will be required. The handling of a good clover growth has often been spoilt in curing. The general opinion is not to put it in the stack too green, but this is a fallacy. Do not put it in the stack wet. The hay maker should realise that it is the leaf of the clover which contains the highest percentage of protein, and that is what the dairy cow requires. A hay shed and a 10 cow milking shed is necessary and will cost £60. Chaffed Meadow Hay provides a more balanced or staple diet during winter and early spring, when the grazing is watery and over succulent. Early winter growths of green feed can be had, by sowing with the first rains on fallow, cereal rye, Cape Barley, wheat, and oats.

A good haystack is worthy of a good roof, and in a district with a heavy rainfall is a necessity.

ENSILAGE.

Another way to provide for the lean months is by the manufacture of silage. The most popular method is the stack curing process, the others being a pit or above the ground silo. I have tried both stack and pit, preferring the pit owing to less labour in filling and no wastage as in the case with the stack method. I selected a site on sloping ground, where by sinking a circular hole 11ft. in diameter by 15ft. deep I was able to build up the earth another 3ft., making a pit 18ft. deep. A 1½in. pipe was placed inthe centre of the hole, and secured at the top and bottom, an arm being attached which would revolve, giving the radius of a circle 10ft. in diameter. It will take 3,000 second hand hard bricks at £2 10s. per 1,000 including cartage, making a single brick wall 15ft. high, with 3ft. of double brick at the top. The 15ft. was laid with lime mortar and the double brick work with cement. Whilst the bricks are being laid, dry sand should be run in behind the bricks to fill the cavities between the earth and the bricks. Three bags of lime and two bags of cement, costing 25s. were used. The total cost of material was £8 15s. This pit will store between 40 and 50 tons of ensilage.

To weigh down the material, cover the surface with flat slabs fitting neatly, giving a small clearance to the brick-work, then apply 3 tons of logs and stones. I prefer to chaff all green stuff, maize, cereals, etc., into the pit, which saves a lot of waste when feeding.

To the cost of equipment must be added a chaff cutter, £28, 4½ h.p. oil engine, £60, also some transport unit to cart hay and ensilage. The 30 cwt. motor truck is the most popular, and is generally put to all uses.

CULTIVATION OF LAND AND ROTATION OF CROPS IN THE CLARENDON DISTRICT.

[A. A. HARPER, Clarendon.]

The first item of importance is to have the team and machinery in good condition, so that there will be no delay when the time comes for a start. Whatever the land may be, new or old, it should be fallowed in September, while the ground is soft. Plough to 5in. deep if sub-soil will allow it, and not more than 10in. to 10½in. furrows. That will turn over in a nice position to work down. If turning over a 12in. or 13 in. furrow, it will go too flat, and the harrows will not break it so well. Harrow it down before it gets too dry or too wet, land always works best when it is freshly ploughed. Cultivate in October and again in December, plough in February and harrow. Cultivate in April and harrow, run sheep over it when in a dry condition, and replough at the end of June or the beginning of July, and plant.

It is proposed to deal separately with each year's cropping operations. The crop recommended for fallow is pease. Pease do as well on fallow as wheat or oats, and

a 50 per cent. better harvest will be obtained by sowing pease on old land. The amount of seed should be 3 bushels to the acre, together with 1½cwt. of Basic Slag, it should be drilled sufficiently deep to be covered nicely; then harrowed off and rolled.

Harvesting.—The crop should be cut when in a yellow stage; it may cause a little more inconvenience in cutting, but it is worth while because all the pease can be gathered. In cutting, roll into even reasonably tight rolls, just large enough for one man to handle, and place them in straight rows across the paddock so that the team when carting can drive along the side. This saves travelling around the paddock to collect the harvest. The carting should be executed as soon as possible and threshed to procure a good sample. One small team with 2 men for carting, and 4 men with 2 horses and a roller in a yard comprises a good working kit. They should clean up the crop at fairly short intervals in case of a change in weather conditions.

SECOND YEAR.

Presuming that the stubble has been cleaned up with sheep; cultivate and harrow in February, plough in April to the depth of 3in to. 4in. and harrow, recultivate at the end of May or early in June, and drill with 2bush. of wheat, and 1cwt. Basic Slag per acre. The wheat recommended is either Warden or Coral, or if a mixed crop is desired, 1bush. of wheat and 1½bush. of oats, together with the quantity of Slag before-mentioned. Drill sufficiently deep to cover the seed. When the crop is 2in. or 3in. high, a light roller run over it will do good. The cutting should take place when the grain is in a doughy stage, and it should be put into stooks as soon as it is cut, so that bleaching will not take place. The size of the stooks for good working in an average crop should be about 30 sheaves. Cart it after it has been cut about a fortnight if the weather conditions are suitable, and feed off the stubble with sheep.

THIRD YEAR.

Plough the land in February, and leave it turned up to the sun until the first rain, and then harrow. In April, cultivate, harrow in the rough, and roll. Plough in May and drill in 2½ bush. of oats with 1cwt. of Basic Slag, not too deeply; roll when the crop is 2in. or 3in. high, cut when the oats are in a yellow stage, stook when cut—in about 20 sheaves. Cart in from 2 to 3 weeks if weather permits. Should rain fall prior to the time of seeding, run the harrows over the land, but under no circumstances should this operation be done while the land is boggy or dry and dusty.

THE CASE FOR THE MAN ON THE LAND.

[M. J. VICKERS, Lenswood and Forest Range.]

This paper has been written in defence of the man on the land, because of the resentment which has been recently directed against him, when he has been forced to ask for some assistance. He was asked to produce more and is now being condemned for doing so. Australia's partial recovery is due to its exports of primary produce, which although of relatively low value, amount to huge totals on account of their immense volume. These reports prove that the primary producer is working harder than ever—growing twice the amount of goods to offset the poor price. A producer is not even recognised as an authority in his own business because he never claims to be one. So long as he figures in the public imagination as a dull, hard-working labourer he is selling his dignity and self respect for something less than a mess of pottage. As a matter of fact he is no such person—the great mass of them do more thinking than the average man and he, who without so much as the rudiments of what is erroneously called education, has succeeded in agriculture, has more sense, more honourable wisdom of real life and more courage to face its bad weather, emergencies, etc., than the city man, even though he be a university graduate. But the real producer never adds one cubit to his own stature, though it may be deserved.

[*Papers Read at Conferences.*]

The shippers talk down to the growners until the growers feel like country school boys who have grown old without making the last grade. They speak with that same air of blissful authority that a childless parson or maiden lady shows when they are advising real parents how to bring up their children. If we would only get up and talk back and compel their attention we may fire the imagination of the people with a sense of us and what we need and deserve my be granted with some of the fervour we bestow upon more spectacular heroes.

The grower does not defend himself from the talkers and writers, but they are the men who have built the world, nourished it and held it together in peace and war for ages and perish unhonoured and unsung because such people lack the endless use of their tongues. Theirs is the silent eloquence of work well done, of adversities and hardships bravely endured, like a season of bad weather. They are so absorbed in the labour of life that they fail to acquire the spoken art of interpreting themselves.

The world has now changed. The power of speech has become tyrannical. It is the front page method of controlling the public mind and determining the policies which control every circumstance in civilisation. Therefore, for a man not to speak and contend for his rights and his own point of view, is for him not to vote on his own fate. Every other class of men and workers has recognised this fact sooner than the producers. The fact is that tilling the soil through the ages has produced a psychic effect upon the minds of these men. It is a vocation, the first and oldest. The evidence of this fact is that all other men abandon an unprofitable profession, and the industrial worker will invariably leave his job for one that pays better, but in this country, in every country, age after age, men bred to the land stay on it, even to the point of starvation. Sweat of their brows in the open, whether it pays or not, and barring the flotsam and jetsam of them, they can no more be divorced from it by failures and poverty than will an artist give up painting because he cannot sell his pictures.

Although modern civilisation enables most of the population to live in the cities, every man retains a rudimentary instinct for the land, even though for two or three generations his people have been born and bred to city pavements. But they could not, and would not endure the plainness and quietness of such a life if they tried. It is an instinct—and that instinct to return is like the appendix—a lost ligament in living! Still they feel the pain of it occasionally, and mistake it for a craving for the country? But with the producer, that first enchantment of the soil is still so strong that he has remained unconscious of it, whilst the world which determines his fate and fortune has changed and left him still as inarticulate as he was a hundred years ago, when there was no such need as now for putting on the defensive and offensive of loud speaking to save himself from his critics. New ground cannot be cleared by talking—no man ever acquired an eloquent use of words by ploughing a field. He cannot change the weather by addressing the winds that control it. His good sense consists in preparing against floods and droughts. He becomes the student of the earth, of the life of seeds and plants. Nothing written—all secrets of the air and soil are to be learned by experience, no matter how many books on agriculture he may have read. Whatever his faults or limitations, he has learned enough and worked hard enough from the beginning to feed and clothe mankind, which is more than could have been done by any other class of man.

The producer is a great man and does not know it, consequently, the rest of the community does not know it either. He has become the victim of his own modesty and silence. This is the reason why so many designing and officious people presume to give him advice. He never says anything—not in public. The world has talked itself generally out of a sense of responsibility and wants to make the producer responsible. Let a fool get a fatal facility for words and he will talk his head off, giving a wise man advice if the wise man keeps silent. Thus they are about to mortgage the producers' self-consciousness, with the inferiority complex. His position is not peculiar to him, it is his outrageous patience and silence under so much provocation that is

peculiar to him. In every walk of life it is the fellow who cannot achieve who appoints himself the critic of those who can.

An author can outdo his critics by writing another book or a painter by painting another picture—but the producer has no such opportunity for interpreting himself and his works. Up to the present time his only way of reach the public is the anonymous one of producing the bread that feeds it and this is all taken for granted.

The producer by his silence has made himself too easy to be absorbed. He has not disagreed with his critics enough to be even interesting. All people returning from England think it is their duty to bring our fruit export into the headlines of the paper as a bad news item, even though they may not know fruit, or even have seen it. They stand up and cast these faults like an unpaid account—yet nobody talks back.

Writers, speakers, &c., all kinds of intellectual people are invited to address appreciative audiences, but does anybody ever invite an honest producer to deliver a lecture on agriculture? They do not. Some of the best educated men in this country are farmers, but in the colleges, agriculture is taught by men who have studied it in books and laboratories. There is good in it, *but* there is no one among that learned body to teach from that best school—experience—the subtle and temperamental difference between theory and practice or to inspire students with the courage it takes to work out their own salvation in spite of earth, weather, and all the vicissitudes that are ever dogging us. Agricultural schools would turn out more working farmers and not so many agriculturists, if even they were given lectures by real producers.

CONIFERS.

[W. J. BISHOP, Lenswood.]

The name Conifer is descriptive of the plant "cone"—the shape of the fruit and "ferous"—bearing, thus all cone bearing plants are classified as Conifers. Cone bearing and cone shaped, this majestic family ranges from the mighty Redwood—the giant of all forest trees, to the dainty *Retinosporas, Biotas* and *Thuyas*, which grace rock gardens. But whether giant or dwarf, all are characteristically beautiful. Besides being noted for their undoubted beauty, Conifers are also the most useful and widely known of all timber trees. Referring to them by their common names the following is a list that forces one to realise that this claim is well founded: Oregon Pine, Baltic Fir, Canadian Spruce, Redwood, Cedar, Kauri and Rimu Pine of New Zealand and the locally grown pines, *Insignis* or *Radiata*. Although the timber value of these trees makes them indispensable, there are numerous by-products also. Of these the most important is paper pulp, and when one thinks of the mighty power of the press to-day, one realises how truly prophetic Shakespeare was when he spoke of "Tongues in Trees," artificial silk and synthetic wool are two other widely used products that claim the pine tree as their origin.

From resin is obtained turpentine, varnish and Stockholm tar, and from yet another Conifer—the Juniper, is distilled the useful spirit—gin.

Before the trees can be put to these several uses it means in most instances that they have to be felled, but they can serve still other useful purposes while standing. The main one, and this concerns both orchadist and stockowner, is for breakwinds and hedges. Conifers are ideal for this purpose. Evergreen, and with spreading branches from the ground level, upwards, they make a dense wind break. The larger growing varieties quickly attain a height of from 50 to 100 feet, and if a lower hedge is required, numerous varieties can be had and kept trimmed from heights varying from 3 to 20 feet. These hedges are most ornamental, and offer a wide range in both colour and form.

Practically without exception, the vast range of these useful trees flourish in any country where Stringy-Bark growns naturally, and most of them also do well in Gum country.

While in no way wishing to detract from the merits of native timber, because all trees are useful and beautiful, the Conifers could be featured much more generally. Some varieties in particular are very rapid growers and mature quickly, and in a given time make more super feet per acre in good Stringy-Bark country, than any other timber trees. Australia herself is almost barren of Native Conifers. The Callitris—the family which includes the Murray Pine—is the only genus of the Southern mainland. Tasmania is the home of *Dacrydium Franklini*—the Huon Pine, now almost completely cut out. In Queensland, there are one or two species of *Araucaria* of which the Hoop Pine is most widely known, and New Zealand is the home of the famous Kauri Pine and the New Zealand *Rimu procorpa*. These, with the *Dammara australis Araucarias*, of which the Norfolk Island Pine and the Monkey Puzzle tree—*Araucaria imbricata*—of Chili constitute the main varieties of the Southern Hemisphere. In the Northern Hemisphere the position is very much different. There, the Conifer reigns supreme. The *Abies piceas* of Northern Europe and America are the main source of supply for the soft-wood timbers of the world. Lower down in Northern Africa, India, China and America the Cedar flourishes, and in California the Redwoods *Sequoia gigantea* and *sempervirens* have their habitat. The *Cryptomeria* is the principal tree of Japan, and *Pinus*—the true pine—is scattered all over the Northern Hemiphere.

When one considers the unbounded uses for these trees and remember that one and all of the varieties metioned will flourish in our Hills Districts, they should be put to a much greater use than is the case at present.

There is one great enemy to all trees—Pines in particular—and that is the bush fire menace, but if landholders of the Hills became tree minded, and planted them extensively—and to grow trees is to love them—the risk of bushfires would be greatly minimised, and with the intelligent clearing and burning of fire breaks, it would be safe to prophecy that serious outbreaks—most often caused by thoughtlessness and carelessness—would cease to exist.

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DAIRY AND FARM PRODUCE MARKETS.

Messrs. A. W. SANDFORD & Co. LIMITED, reported on 1/10/35:—

BUTTER.—Butter production through September was satisfactory and the tonnage was greater than for many years past. Fortunately rains were received at opportune times throughout the month and, therefore, the feed came along nicely. Owing to the fact of our having obtained first prize at the Adelaide Show for butter which had been six weeks in cold storage, a strong demand continues with us both locally and for overseas. The London market is still firming and, as we have selling avenues in all parts of Britain, consignors are assured of best results. Local rates were without change, being:—Choicest creamery fresh butter in bulk, 1s. 2¾d. per pound; prints and delivery extra (this price is for local sale only and, under the quota system, the equalised price manufacturers will receive will be 1s. 0¾d. per pound, on which basis payments to cream suppliers will be calculated); separator lines, from 10½d. to 11½d. per pound for choicest; stores, 6d. to 8d. per pound (these prices are subject to equalisation levies).

CHEESE.—The output at present from the factories in the South-East is higher than for several years past and it looks now as though record quantities will result. Fortunately the London market appreciates the quality of the South Australian cheese and is asking for additional supplies. Shipments are going forward each week so that the stocks are being kept nicely cleared. There was a firming in the price of matured cheese owing to stocks now being considerably reduced. Rates are:—Large and medium, from 9½d. per pound; loaf, from 10d. per pound at store door, delivery extra; semi-matured and matured, 1s. to 1s. 0½d. per pound.

EGGS.—Production has gone forward rapidly during the last few weeks, the milder weather no doubt assisting in this respect. Exporting to London continues, but only the very highest grade will pass the inspectors, and there is a considerable proportion of the consignments which are not suitable and these have to be manufactured into egg pulp. Values are:—Ordinary country eggs, fair average quality, 5d. per dozen net; long distance rail or shipping eggs lower; selected new laid, clean eggs, full-sized, 10½d. to 11d. per dozen net.

BACON.—The turnover throughout the month was satisfactory, but has now lessened with the incoming of warm weather. Hams and bacon factory smallgoods on the other hand have improved in demand and values firmed:—Best quality sides, 9½d. to 9¾d. per pound; middles, 9½d. to 10d.; heavy middles, 8d. to 8½d.; rolls, 8d. to 8½d.; hams, 1s. 2d. to 1s. 3d.; cooked, 1s. 4d. per pound; lard, bulk, 5d. to 5½d., prints 6d. to 6½d. per pound.

ALMONDS.—Only limited quantities were marketed throughout the month and these sold readily at quotations:—Softshells and Brandis, 8½d. to 9½d.; hardshells, 5d. to 5¼d.; kernels, 1s. 9½d. to 1s. 10½d. per pound.

HONEY.—There are still very heavy stocks held in some merchants' hands and this is overshadowing the market somewhat so that there seems little likelihood of increased prices. Quotations were unchanged but sales are slow:—Prime quality clear extracted, 2¼d. to 2¾d. per pound; lower grades, 1d. to 2d. per pound.

BEESWAX.—Met with steady sale throughout the month although stocks were not heavy. Rates are:—1s. 4d. to 1s. 4½d. per pound according to quality.

LIVE POULTRY.—Auction sales are held every Tuesday, Wednesday, Thursday, and Friday at our sale rooms which are in every way the best equipped in the State. There was a strong demand experienced at each of the sales held, but during Show week supplies were very short. There has been an improvement since, but much heavier quantities could be placed satisfactorily. We advise consigning. Crates loaned free on application. The following are prices realised:—Prime roosters, 3s. 9d. to 4s. 10d.; nice conditioned cockerels, 3s. 4d. to 3s. 8d.; fair conditioned cockerels, 2s. 4d. to 3s. 1d.; chickens, lower; heavyweight hens, 3s. 3d. to 3s. 9d.; medium hens, 2s. 8d. to 3s.; light hens, 2s. to 2s. 6d.; couple of pens of weedy sorts, lower; prime young Muscovy drakes, 3s. 8d. to 5s.; young Muscovy ducks, 2s. 6d. to 3s. 3d.; ordinary ducks, 1s. 3d. to 2s. 3d.; ducklings, lower; geese, 2s. 6d. to 4s.; goslings, lower; turkeys, good to prime condition, 8d. to 9d. per pound live weight; turkeys, fair condition, 6d. to 7½d. per pound live weight; turkeys, poor and crooked breasted, lower; pigeons, 5d. to 6d. each.

POTATOES.—New season's, 13s. per cwt.

ONIONS.—Brown Spanish, 9s. per cwt.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., DURING MONTH OF AUGUST, 1935.

IMPORTS.

Interstate.

Apples (bushels)	783	Corms (package)	1
Apple custard (bushels)	6½	Plants, fruit (package)	1
Bananas (bushels)	15,816	Plants, ornamental (packages)	118
Citrus—		Seeds (packages)	60
Grape fruit (bushels)	54	Shrubs (packages)	5
Oranges (bushels)	3	Trees, fruit (packages)	43
Passion fruit (bushels)	334	Trees, ornamental (packages)	3
Paw Paws (bushels)	8	Wine casks (No.)	2,155
Pineapples (bushels)	1,263		
Nuts—		*Fumigated*—	
Peanuts (bags)	1,334	Citrus—	
Peanut kernels (bags)	61	Grape Fruit (bushels)	53
Popple (bags)	3	Trees, fruit (packages)	28
Beans (bushels)	94	Wine casks (No.)	21
Carrots (bags)	4		
Cucumbers (bushels)	4	*Rejected*—	
Onions (bags)	137	Bananas (bushels)	21
Potatoes (bags)	12,611	Citrus—Oranges (bushel)	1
Potatoes, sweet (bushels)	30	Pineapples (bushels)	1½
Swedes (bags)	53	Beans (bushels)	2
Bulbs (packages)	21	Potatoes (bags)	50

Overseas.

(State Law.)

Wine casks (No.)	1,267	*Fumigated*—Wine casks (No.)	71

Federal Quarantine Act.

	Packages.	Lbs.		Packages.	Lbs.
Seeds, &c.	8,438	1,560,354	Handles	35	—
Canes	203	—	Plants	2	20 (No.)
Tea chests	1,855	—	Timber	271,881	4,357,500 Sup. ft.

EXPORTS.

Federal Commerce Act.

		Packages.			Packages.
England	Citrus—		Malta	Citrus—	
	Grape fruit	8		Grape fruit	30
	Lemons	2		Oranges	100
	Oranges	70	Netherlands, East Indies	Citrus—	
Germany	Citrus—			Oranges	20
	Oranges	3		*Vegetables	27
India	Apples	884	New Zealand	Citrus—	
	Citrus—			Oranges	31,194
	Grape fruit	10	Singapore	Citrus—	
	Lemons	8		Lemons	1
	Oranges	79		*Vegetables	33
	*Vegetables	30			

* Potatoes excluded.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of September, 1935, also the average precipitation for September, and the average annual rainfall.

Station.	For Sept., 1935.	Av'ge. for Sept.	To end Sept., 1935.	Av'ge. Annual Rain-fall.
Far North and Upper North.				
Oodnadatta	0·47	0·29	3·05	4·66
Marree	1·03	0·43	3·38	5·88
Farina	0·66	0·46	3·03	6·43
Copley	0·80	0·64	2·53	7·87
Beltana	0·62	0·73	2·45	8·48
Blinman	0·90	1·05	3·09	11·86
Hookina	0·47	0·97	2·90	11·25
Hawker	0·69	1·14	4·07	12·26
Wilson	0·47	1·08	3·96	11·79
Gordon	0·48	0·97	3·52	10·53
Quorn	1·15	1·31	5·37	13·22
Port Augusta	0·75	0·93	6·11	9·44
Bruce	0·88	0·96	4·37	9·87
Hammond	0·89	1·18	4·84	11·21
Wilmington	*1·47*	*1·89*	*8·32*	*17·32*
Willowie	0·74	1·43	5·75	12·25
Melrose	1·70	2·48	15·08	22·88
Booleroo Centre	1·01	1·70	8·58	15·21
Port Germein	0·67	1·30	7·30	12·53
Wirrabara	1·32	2·18	11·77	19·29
Appila	0·96	1·65	10·17	14·65
Cradock	0·44	1·02	3·33	10·82
Carrieton	0·93	1·19	5·81	12·23
Johnburg	0·78	1·09	4·39	10·58
Eurelia	1·11	1·33	4·83	12·79
Orroroo	0·79	1·27	6·27	13·20
Nackara	1·01	1·14	4·96	11 09
Black Rock	0·83	1·26	5·77	12·37
Oodlawirra	0·71	1·32	4·71	11·68
Peterborough	1·00	1·43	6·92	13·22
Yongala	1·07	1·59	8·72	14·44
North-East.				
Yunta	0·54	0·72	3·47	8·55
Waukaringa	1·03	0·65	3·39	7·94
Mannahill	0·76	0·59	2·99	8·20
Cockburn	0·69	0·60	2·01	7·96
Broken Hill, N.S.W.	1·28	0·73	2·88	9·56
Lower North.				
Port Pirie	0·70	1·40	9·17	13·21
Port Broughton	0·87	1·53	10·93	13·88
Bute	0·98	1·65	10·81	15·44
Laura	1·34	2·15	12·22	17·95
Caltowie	1·01	2·02	9·37	16·74
Jamestown	1·22	2·12	11·44	17·69
Gladstone	1·02	1·95	11·10	16·29
Crystal Brook	0·95	1·76	12·09	15·78
Georgetown	0·84	2·16	11·21	18·37
Narridy	1·20	1·82	10·62	15·82
Redhill	1·31	1·80	13·59	16·59
Spalding	1·35	2·44	12·90	18·88
Gulnare	1·26	2·31	12·31	18·68
Yacka	0·92	1·78	11·55	15·39
Koolunga	0·88	1·65	10·49	15·38
Snowtown	1·17	1·69	12·17	15·74
Lower North—*continued*.				
Brinkworth	1·31	1·89	11·94	15·82
Blyth	1·34	1·95	14·13	16·78
Clare	2·33	2·86	18·24	24·51
Mintaro	1·55	2·97	17·57	23·42
Watervale	2·04	3·17	20·38	26·80
Auburn	*1·84*	*2·83*	*18·33*	*23·98*
Hoyleton	1·33	1·97	13·22	17·33
Balaklava	1·50	1·70	10·98	15·46
Port Wakefield	1·28	1·27	9·76	12·94
Terowie	0·70	1·50	6·86	13·35
Yarcowie	0·93	1·55	7·97	13·59
Hallett	1·21	1·94	11·95	16·46
Mount Bryan	1·38	2·22	13·29	16·83
Kooringa	1·43	2·09	11·94	17·85
Farrell's Flat	*1·77*	*2·17*	*13·07*	*18·61*
West of Murray Range.				
Manoora	1·38	2·39	14·19	18·92
Saddleworth	1·16	2·26	14·38	19·60
Marrabel	1·48	2·36	14·93	19·96
Riverton	1·80	2·41	17·26	20·81
Tarlee	1·44	2·12	13·15	18·10
Stockport	1·87	2·05	15·50	16·93
Hamley Bridge	1·66	1·92	12·55	16·54
Kapunda	1·83	2·23	13·34	19·79
Freeling	1·55	2·02	13·97	17·83
Greenock	2·00	2·57	16·46	21·53
Truro	2·32	2·32	15·71	19·89
Stockwell	2·22	2·33	15·51	20·13
Nuriootpa	2·78	2·39	19·37	20·72
Angaston	2·78	2·61	17·36	22·42
Tanunda	*3·14*	*2·51*	*19·53*	*22·02*
Lyndoch	3·85	2·82	19·57	23·40
Williamstown	3·56	2·97	20·57	27·77
Adelaide Plains.				
Owen	1·60	2·09	11·93	14·66
Mallala	1·16	1·85	10·88	16·56
Roseworthy	2·63	1·99	14·82	17·40
Gawler	2·25	2·05	14·81	18·91
Two Wells	*1·79*	*1·59*	*15·91*	*15·75*
Virginia	1·98	1·79	14·90	17·18
Smithfield	2·07	2·05	15·15	17·64
Salisbury	2·03	1·91	15·20	18·56
Adelaide	2·77	2·09	18·75	21·15
Glen Osmond	3·40	2·76	21·68	26·05
Magill	3·35	2·73	21·12	25·53
Mount Lofty Ranges.				
Teatree Gully	2·69	3·03	21·72	27·20
Stirling West	6·82	5·14	43·65	47·08
Uraidla	5·01	4·91	34·94	44·19
Clarendon	6·89	3·49	29·51	23·88
Happy Val'y Res.	4·21	—	21·91	—
Morphett Vale	3·71	2·50	19·38	22·66
Noarlunga	2·91	2·25	17·48	20·37
Willunga	3·35	2·81	20·85	26·02
Aldinga	2·47	2·29	16·04	20·27

RAINFALL—*continued*.

Station.	For Sept., 1935.	Av'ge. for Sept.	To end Sept., 1935.	Av'ge. Annual Rainfall.
Mount Lofty Ranges—continued.				
Myponga	3·84	3·76	30·74	29·50
Inman Valley	2·80	—	27·33	—
Yankalilla	1·96	2·53	18·59	22·83
Mount Compass	5·71	—	—	—
Mount Pleasant	3·23	3·28	21·78	27·23
Birdwood	3·19	3·43	23·58	29·21
Gumeracha	3·81	3·76	27·48	33·41
Millbrook Res.	4·40	4·31	31·00	34·68
Tweedvale	4·86	4·22	33·18	35·99
Woodside	4·13	3·91	28·60	32·31
Ambleside	6·50	4·16	32·74	34·90
Nairne	4·42	3·38	25·01	28·22
Mount Barker	5·51	3·64	27·22	31·31
Echunga	6·74	3·87	31·51	33·30
Macclesfield	5·51	3·76	26·98	30·43
Meadows	6·72	4·35	31·60	36·16
Strathalbyn	2·89	2·24	17·39	19·31
MURRAY FLATS AND VALLEY				
Meningie	3·08	2·04	14·37	18·37
Milang	1·37	1·56	10·23	14·91
Langhorne's Ck.	1·95	1·69	11·99	14·87
Wellington	1·67	1·63	11·67	14·65
Tailem Bend	1·97	1·92	12·30	15·06
Murray Bridge	1·82	1·59	9·58	13·56
Callington	2·56	1·83	11·05	15·19
Mannum	1·21	1·31	9·41	11·49
Palmer	1·91	2·14	13·58	15·63
Sedan	1·47	1·37	7·53	12·11
Swan Reach	1·55	1·32	7·62	10·64
Blanchetown	1·17	1·01	6·06	11·01
Eudunda	1·36	1·95	13·41	17·17
Pt. Pass	1·40	2·46	13·32	—
Sutherlands	0·70	1·25	5·48	10·84
Morgan	0·54	1·00	4·53	9·17
Waikerie	0·84	1·10	5·67	9·65
Overland Corner	0·43	1·13	3·91	10·32
Loxton	0·86	1·42	5·62	11·54
Berri	0·67	1·25	6·10	10·17
Renmark	0·63	1·23	6·39	10·41
WEST OF SPENCER'S GULF				
Eucla	1·13	0·75	10·59	9·96
Nullarbor	0·96	0·56	11·66	8·81
Fowler's Bay	1·23	0·89	10·27	11·94
Penong	2·50	1·00	10·72	12·27
Koonibba	1·92	1·01	10·84	12·13
Denial Bay	1·64	0·83	9·14	11·36
Ceduna	2·09	0·85	10·26	10·16
Smoky Bay	1·87	0·89	9·65	10·53
Wirrulla	2·20	1·13	12·49	10·54
Streaky Bay	3·26	1·31	16·25	14·88
Chandada	2·09	1·17	12·02	—
Minnipa	1·77	1·33	11·22	14·06
Kyancutta	1·44	1·40	11·73	—
Talia	1·83	1·67	12·75	14·76
Port Elliston	1·61	1·46	15·15	16·54
Lock	1·62	1·77	13·53	16·52
Mount Hope	2·30	—	18·41	—
Yeelanna	1·44	1·88	17·16	15·94
Cummins	2·05	2·01	17·45	17·60
Port Lincoln	1·10	1·99	13·77	19·42
Tumby	0·83	1·72	11·23	14·12
Ungarra	1·44	2·14	14·30	16·85
Port Neill	0·89	1·59	9·79	13·09

Station.	For Sept., 1935.	Av'ge. for Sept.	To end Sept. 1935.	Av'ge. Annual Rainfall.
West of Spencer's Gulf—continued.				
Arno Bay	1·08	1·54	10·74	12·65
Rudall	1·32	1·48	11·92	12·64
Cleve	1·66	1·69	14·23	14·83
Cowell	0·63	1·19	7·08	11·07
Miltalie	1·08	1·50	12·16	13·67
Mangalo	1·15	1·60	10·33	13·91
Darke's Peak	1·96	1·82	14·46	15·18
Kimba	1·61	1·22	10·39	11·82
YORKE PENINSULA.				
Wallaroo	0·47	1·35	10·67	13·98
Kadina	0·70	1·57	12·45	15·64
Moonta	0·61	1·43	10·96	15·06
Paskeville	1·40	1·60	11·34	15·49
Maitland	1·57	2·06	16·52	19·90
Ardrossan	1·04	1·52	11·61	13·97
Port Victoria	0·99	1·60	10·19	15·44
Curramulka	1·46	1·94	12·14	17·87
Minlaton	1·81	1·88	12·26	17·79
Port Vincent	1·22	1·81	10·47	14·43
Brentwood	2·00	1·76	13·39	15·55
Stansbury	2·05	1·94	13·09	16·82
Warooka	1·60	1·89	13·29	17·49
Yorketown	2·03	1·89	16·53	16·88
Edithburgh	1·55	1·81	13·66	16·37
SOUTH AND SOUTH-EAST.				
Cape Borda	2·63	2·16	25·67	24·82
Kingscote	2·12	1·87	19·05	19·14
Penneshaw	2·73	2·18	17·79	18·92
Victor Harbour	1·43	2·43	17·41	21·37
Port Elliot	1·35	2·25	13·98	19·93
Goolwa	0·91	1·96	12·43	17·85
Maggea	1·24	1·22	6·69	10·04
Copeville	1·49	1·55	9·11	11·51
Claypans	1·93	1·10	8·94	10·38
Meribah	1·24	1·48	7·14	11·31
Alawoona	1·39	1·14	7·43	10·36
Caliph	1·10	0·85	6·45	—
Mindarie	1·71	1·59	8·31	12·21
Sandalwood	1·81	1·65	10·30	13·66
Karoonda	1·58	1·76	11·34	14·36
Pinnaroo	1·34	1·73	7·14	14·43
Parilla	1·32	1·82	9·15	13·82
Lameroo	1·54	2·08	10·09	15·97
Parrakie	2·07	1·89	13·55	14·62
Geranium	1·83	2·07	14·38	16·51
Peake	1·46	1·97	14·26	16·01
Cooke's Plains	1·62	1·85	12·67	15·30
Coomandook	1·80	2·04	13·59	17·09
Coonalpyn	1·91	2·00	15·37	17·61
Tintinara	2·19	2·19	15·97	18·71
Keith	2·50	2·23	16·16	17·92
Bordertown	2·01	2·21	1[illegible]·97	19·21
Wolseley	2·08	2·23	15·46	18·49
Frances	2·72	2·31	19·50	20·11
Naracoorte	2·21	2·61	21·24	22·66
Penola	1·80	2·82	21·10	26·01
Lucindale	2·17	2·53	24·93	23·34
Kingston	2·01	2·37	21·07	24·28
Robe	1·39	2·22	22·04	24·67
Beachport	1·52	2·40	24·58	27·09
Millicent	2·37	2·98	29·65	29·79
Kalangadoo	2·35	3·59	25·11	32·28
Mount Gambier	3·32	3·09	23·25	30·45

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page.	Dates of Meetings.	
		Nov.	Dec.
Adelaide	*	—	—
Alawoona	*	—	—
Aldinga	*	—	—
Allandale East	420	7	5
Alma	*	—	—
Angaston	*	—	—
Appila-Yarrowie	420	1	6
Arthurton	*	—	—
Ashbourne	*	6	4
Auburn Women's	432	—	R
Balaklava	*	R	R
Balhannah	*	—	—
Balhannah Women's	*	20	18
Balumbah	421	—	—
Balumbah Women's	432	1	4
Barmera	*	—	—
Baroota	*420*	*11*	*9*
Beetaloo Valley	*	11	9
Belalie Women's	432	12	10
Belvidere	*	—	—
Berri	*	11	9
Blackheath	*	14	12
Black Rock	*	—	—
Black Springs	*	R	R
Blackwood	*	11	9
Block E	*	—	—
Blyth	*	22	27
Booborowie	*	11	9
Booleroo Centre	*	22	R
Boolgun	*	—	—
Boor's Plains	432	—	—
Boor's Plains Women's	—	—	—
Brentwood	*	4	2
Brimpton Lake	—	—	—
Brinkley	*	6	4
Brownlow	*	—	—
Buchanan	*	—	—
Bundaleer Springs	*	—	—
Bute	*	21	19
Butler	421	—	—
Calca	*	—	—
Caliph	*	5	3
Carey's Gully	*	—	—
Chandada	*	—	—
Chapman's Bore	—	11	9
Charra	*	—	—
Cherry Gardens	421	9	14
Chilpuddie Rock	421	6	4
Clare Women's	*	2	7
Clarendon	*	11	9
Collie	*	6	4
Coomandook	421	29	27
Coonalpyn	*	6	4
Coonalpyn Women's	*	—	—
Coonawarra	420	14	12
Coonawarra Women's	432	20	19
Cummins	*	8	13
Cungena	*	7	5
Currency Creek	*	11	9
Dudley	*	—	—
Echunga	*	27	R
Eurelia	*	9	14
Eurelia Women's	*	6	4
Finniss	*	—	—
Frances	*	—	—
Frayville	421	—	—
Gawler River	*	—	—
Georgetown Women's	432	12	10
Gladstone	*	8	6
Gladstone Women's	*	12	17
Goode	421	—	—
Goode Women's	*	—	—
Green Patch	421	7	5
Greenock	420	18	16
Gumeracha	*	11	9
Hanson	420	5	10
Hartley	421	6	4
Hindmarsh Island	*	—	—
Hope Forest	—	4	2
Hope Forest Women's	*	—	—
Inman Valley	*	21	19
Jamestown	*	20	18
Jervois	*	*14*	*12*
Kalangadoo	432	9	14
Kalangadoo Women's	—	9	14
Kangarilla Women's	*	21	19
Kanni	421	—	—
Karte	421	—	—
Karte Women's	*	—	—
Kelly	421	2	7
Ki Ki	*	—	—
Kilkerran	*	7	5
Koolunga	*	—	—
Koonunga	421	—	—
Koppio	*	13	11
Kulkawirra	421	12	10
Kyancutta	*	5	3
Kybybolite	*	7	5
Kybybolite Women's	*	12	10
Lameroo	*	9	7
Laura	*	9	7
Laura Bay	421	12	10
Laura Bay Women's	432	12	10
Lenswood and Forest Range	*	—	—
Light's Pass	420	—	—
Lipson	421	9	7
Lone Gum and Monash	*	21	19
Lone Pine	*	11	9
Longwood	*	—	—
Lyndoch	421	5	10
MacGillivray	*	5	10
McLaren Flat	*	—	—
McLaren Vale Women's	432	7	5
Maltee	421	7	5
Maltee Women's	432	—	—
Mangalo	*	—	—
Mangalo Women's	*432*	13	*11*
Marama	421	—	—
Milang	*	9	R
Millicent	*	22	27
Millicent Women's	432	—	—
Miltalie	421	9	7
Minnipa	*	—	—
Monarto South	421	—	—
Monarto South Women's	432	16	21
Moorlands	*	13	11
Moorook	*	—	—
Morchard	*	8	6
Morchard Women's	432	27	—
Mount Barker	*	18	16
Mount Bryan	*	—	—
Mount Compass	*	—	—
Mount Gambier	420	8	13
Mount Hope	*	5	10
Mount Pleasant	*	6	4
Mudamuckla	*	9	14
Mudamuckla Women's	432	—	—

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Branch.	Report on Page.	Dates of Meetings.	
		Nov.	Dec.
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Mundalla Women's	*	14	12
Murray Bridge	*	13	—
Murraytown	—	—	—
Mypolonga	*	—	—
Myponga	*	21	19
Nantawarra	—	7	5
Narridy	420	—	—
Narridy Women's	—	—	—
Narrung	*	—	—
Nelshaby	—	—	—
Nelshaby Women's	*	—	—
Nunjikompita	421	7	5
Nunkeri	421	7	5
O'Loughlin	*	11	9
O'Loughlin Women's	432	—	—
Owen	*	11	9
Palabie	*	—	—
Parilla	*	19	17
Parilla Women's	432	20	18
Parilla Well	421	11	9
Parilla Well Women's	—	26	31
Parrakie	*	—	—
Parrakie Women's	*	26	31
Paskeville	*	5	10
Penola	*	2	7
Penola Women's	*	—	—
Penwortham	*	6	4
Petina	*	23	28
Pinbong	*	—	—
Pinbong Women's	432	—	—
Pinkawillinnie	*	—	—
Pinnaroo	*	—	—
Pinnaroo Women's	432	1	6
Port Elliot	*	—	—
Pygery	*	5	10
Pygery Women's	432	—	17
Ramco	—	11	9
Redhill	420	R	R
Rendelsham	*	9	7
Rendelsham Women's	432	—	—
Renmark	*	—	—
Riverton	*	11	9
Roberts and Verran	*	—	—
Rosedale	421	—	—
Roseworthy	*	—	—
Saddleworth	*	8	6
Saddleworth Women's	432	5	3
Scott's Bottom	*	9	7
Sheoak Log Women's	432	—	—
Shoal Bay	*	5	10
Snowtown	420	8	13
Snowtown Women's	*	7	5
South Kilkerran	—	4	2
Springton	*	6	4
Stanley Flat	*	18	16
Stockport	*	—	—
Strathalbyn	*	13	11
Sutherlands	420	—	—
Tantanoola	420	2	7
Tantanoola Women's	432	6	4
Taplan	*	5	3
Taplan Women's	*	—	—
Taragoro	*	7	5
Tarlee	*	—	—
Tatiara	*	—	—
Tintinara	*	—	—
Truro	*	18	R
Tweedvale	*	21	19
Tweedvale Women's	*	18	16
Ungarra	421	—	—
Upper Wakefield	420	7	—
Wallala	*	13	11
Wandearah	*	5	10
Warcowie	420	5	10
Warcowie Women's	432	—	—
Warramboo	*	5	10
Warramboo Women's	432	—	—
Wasleys	421	14	12
Wasleys Women's	432	7	5
Watervale	*	18	16
Weavers	*	11	9
Wepowie	*	11	9
Wepowie Women's	432	—	—
Whitwarta	420	R	R
Wilkawatt Women's	*	19	17
Williamstown	420	—	—
Williamstown Women's	*	6	4
Willowie	*	25	23
Wilmington	420	19	17
Wilmington Women's	*	14	R
Wirrabara	*	—	—
Wirrabara Women's	*	21	19
Wirrilla	*	9	7
Wirrilla Women's	*	—	5
Wolseley	*	9	14
Wudinna	*	—	—
Yadnarie	*	5	10
Yandiah	*	8	13
Yeelanna	*	6	4
Younghusband	*	—	—
Yundi	421	—	—
Yurgo	*	—	—
Yurgo Women's	*	—	—

* No report received during the month of September. R In recess.

If dates do not appear above, Secretaries are requested to advise the General Secretary of details of Branch programmes, or of the regular night of meeting, *e.g.* 3rd Monday in month.

AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

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MEN'S BRANCHES.

REPORTS RECEIVED.

Branch.	Date of Meeting.	Attendance.	Subject.	Secretary.
		SOUTH-EASTERN DISTRICT.		
Coonawarra	19/8/35	24	Annual Meeting	J. M. Kain
Coonawarra	21/8/35	150	Annual Social	J. M. Kain
Mount Gambier	9/8/35	14	"Superphosphate"—A. A. Sassanowsky	J. E. Morphett
Allandale East .	5/9/35	7	Discussion—Annual Congress	R. T. Laslett
Tantanoola	7/9/35	20	Discussion—Congress Debate, "Dairying *v.* Sheep"	L. J. C. Osborne
		UPPER NORTH DISTRICT.		
Warcowie	27/8/35	14	Social. Addresses—E. L. Orchard and F. C. Richards	A. F. Crossman
Appila	*6/9/35*	*8*	*Question Box*	*E. H. Wurst*
Wilmington	10/9/35	12	"Rope and how to make it," J. S. Hill	Chas. Cole
Warcowie	10/9/35	10	Discussion—Congress ...	A. F. Crossman
Baroota........	9/9/35	11	"Bulk Handling of Wheat"—J. Hillam	E. W. Hulster
		MID NORTH DISTRICT.		
Redhill	3/9/35	61	Address—W. J. Spafford	Lance Harris
Snowtown......	28/8/35	23	Wool Demonstration—C. A. Goddard	A. R. Hocking
Narridy	14/8/35	20	Address—C. A. Goddard	J. Klingner
Narridy	10/9/35	22	"Wheat Marketing"—Mr. Harrington	J. Klingner
Narridy........	5/9/35	60	"Pasture Improvement"—Dr. A. R. Callaghan	J. Klingner
		LOWER NORTH DISTRICT.		
Upper Wakefield	29/8/35	13	Address—R. I. Herriot ..	H. W. Gregor
Hanson	28/8/35	70	Visit to Roseworthy College	M. de N. Lucas
Williamstown...	29/8/35	6	Annual Meeting	W. R. Parmenter
Sutherlands	*4/7/35*	*19*	*Address—W. C. Johnston*	*L. B. Doecke*
Sutherlands	1/8/35	14	Annual Meeting	L. B. Doecke
Greenock	19/8/35	20	"Poultry on the Farm"—G. C. Cartwright	A. Schubert
Whitwarta	29/8/35	20	Wool-classing Demonstration—C. A. Goddard	F. J. G. Collins
Light's Pass ...	9/9/35	18	Addresses—Bert Boehm and Nicholls	C. A. Verrall

REPORTS RECEIVED—*continued.*

Branch.	Date of Meeting.	Attendance.	Subject.	Secretary.
			LOWER NORTH DISTRICT—*continued.*	
Rosedale	9/9/35	15	"Plant Evening"	W. George
Hanson	10/9/35	18	"Wool-classing"—*Geoff.* Gask and F. J. Turner	*M. de N. Lucas*
Koonunga.......	11/9/35	11	"Noxious Weeds"—E. Kleinig	H. Mibus
Lyndoch	13/8/35	45	Lantern Lecture—Shell Co.	J. S. Hammat
Lyndoch	10/9/35	10	Formal business	J. S. Hammat
Wasleys	12/9/35	13	Discussion—"Silage" ..	C. R. Currie
Upper Wakefield	12/9/35	9	"Value of Bureau Meetings"—Mr. Kiely; "Parasites in Pigs"—C. Roberts	H. W. Gregor
			WESTERN DISTRICT.	
Nunjikompita ..	3/8/35	17	Annual Meeting	P. A. Luestner
Nunjikompita ..	15/8/35	21	Address—W. H. Brownrigg	P. A. Luestner
Goode	14/8/35	10	Wheat Commission Report	B. A. Linke
Kelly	31/8/35	26	"Raising Export Lambs"—J. W. Parsons	F. R. Illman
Kelly	31/8/35	26	Discussion—Bulk Handling	F. R. Illman
Maltee	5/9/35	14	"First Aid"—H. Box ..	E. Schwarz
Miltalie	6/9/35	10	Homestead Meeting at D. G. Ramsey's. Address—H. D. Adams	S. D. Ramsey
Green Patch ...	12/9/35	15	Annual Meeting	C. J. Whillas
Laura Bay	10/9/35	15	"Marginal Areas"—J. W. Blumson	P. S. Morrison
Goode	11/9/35	5	Discussion—Congress ...	B. A. Linke
Ungarra	9/9/35	13	"Butter Production"—A. Brice	W. G. Gordon
Butler	17/9/35	8	Formal Business	C. F. Jericho
Balumbah......	10/9/35	5	Discussion—Congress ...	J. E. Swann
Chilpuddie Rock	11/9/35	8	"Crop Rotation"—H. Brown	H. Brown
Lipson	31/8/35	14	"The Wool Clip"—E. L. Barraud	M. Barraud
			EASTERN DISTRICT.	
Kulkawirra.....	20/8/35	8	Discussion—Sheep Diseases	H. J. Elliot
Karte	30/5/35	29	Inaugural Meeting	M. E. Small
Karte	14/6/35	58	Social. Address—F. C. Richards	M. E. Small
Karte	10/7/35	35	Address—R. L. Griffiths .	M. E. Small
Karte	14/8/35	29	Question Box	M. E. Small
Kanni	29/8/35	16	Annual Meeting	E. H. Schulze
Nunkeri	20/6/35	10	Annual Meeting	E. R. Peltz
Nunkeri	2/9/35	18	Address—R. L. Griffiths .	E. R. Peltz
Parilla Well	3/9/35	50	Wool Classing Demonstration—Mr. Dunsmore	E. C. Slater
Marama	10/9/35	7	Discussion—Congress Agenda	T. C. Hinkley
Coomandook ...	24/9/35	15	Address—R. L. Griffiths .	W. R. Tres' ail
			SOUTH AND HILLS DISTRICT.	
Yundi	7/8/35	—	"Fertilisers"—T. M. Conroy	T. R. Smart
Hartley	11/9/35	8	Papers—C. Faehrmann, H. B. Wundersitz, and H. Brook	W. John Brook
Cherry Gardens	7/9/35	13	"Fat Lambs"—K. Jacobs	A. R. Stone
Frayville	13/9/35	11	"History of Superphosphate"—W. Lindner	H. H. Ramm
Monarto South .	21/9/35	21	Congress Delegates Report	C. F. Altmann

FORTY-SIXTH ANNUAL CONGRESS—WOMEN'S BRANCHES.

[The proceedings of the Opening Session will be reported in the general report of the Congress.]

Attendance of Delegates.

The following Branches appointed delegates and the figures indicate the number of sessions for which attendances of delegates were recorded:—

Auburn: Miss L. Dennison (4), Mrs. H. O. Kench (6); *Balumbah*: Mrs. A. Ellis (5), Mrs. A. J. Swann (6); *Belalie*: Mrs. E. L. Orchard (6), Mrs. W. E. Symonds (4); *Boor's Plains*: Mrs. I. M. Chynoweth (0), Mrs. G. Rodda (0); *Clare*: Mrs. J. C. Dux (4), Mrs. D. McFeat (6); *Coonalypn*: Mrs. J. P. O'Donoghue (5), Miss E. E. George (6); *Coonawarra*: Mrs. W. L. Redman (5), Mrs. O. M. Skinner (6); *Eurelia*: Miss M. W. Stott (3), Mrs. M. P. Dinon (4); *Georgetown*: Mrs. A. J. Lyons (6), Miss J. Crawford (3); *Gladstone*: Mrs. J. Lesue (5), Mrs. J. A. Flavel (5); *Goode*: Mrs. P. A. Lange (4), Mrs. D. Fagan (5); *Hope Forest and Dingalbledinga*: Mrs. L. Fincher (4), Miss I. Barclay (3); *Kalangadoo*: Mrs. H. V. Dowdall (5), Mrs. M. Hunt (6); *Kangarilla*: Mrs. G. Thorpe (4), Mrs. Roberts (3); *Karte*: Mrs. H. W. Trowbridge (6), Mrs. D. R. Flavel (6); *Kybybolite*: Mrs. L. J. Cooke (5), Mrs. A. R. Rowe (5); *Laura Bay*: Miss T. E. Barnett (4), Mrs. E. E. Lowe (6); *Maltee*: Mrs. C. T. Schwarz (5), Mrs. H. J. Schwarz (4); *Mangalo*: Mrs. R. Crettinden (3), Mrs. A. J. Turner (2); *McLaren Flat*: Mrs. J. Foggo (0), Miss F. Bell (2); *Millicent*: Mrs. M. Redman (6), Mrs. L. R. Elton (6); *Monarto South*: Mrs. H. B. White (4), Miss M. Hartmann (4); *Morchard*: Mrs. H. M. Brown (4), Mrs. J. Twigden (5); *Mudamuckla*: Mrs. G. H. Noske (5), Miss G. Kreusler (5); *Mundalla*: Mrs. E. Golding (5), Miss M. L. Jones (5); *Narridy*: Mrs. R. Klingner (5), Miss B. Reynolds (5); *Nelshaby*: Miss J. Bain (4), Miss A. Lawrie (4); *O'Loughlin*: Mrs. A. Kloeden (5), Miss M. Kloeden (4); *Parilla*: Mrs. G. Childs (4), Mrs. R. E. Welden (5); *Parilla Well*: Miss V. M. Ireland (4), Miss J. M. Blacksell (4); *Parrakie*: Miss J. Halliday (5), Mrs. E. Lahne (5); *Penola*: Mrs. T. Kidman (4), Mrs. E. E. Kidman (5); *Pinbong*: Mrs. A. Rehn (6), Mrs. J. W. Scholz (5); *Pinnaroo*: Miss N. Mattiske (5), Miss K. O'Loughlin (4); *Pygery*: Miss E. Woodrup (5), Mrs. R. Woodrup (5); *Rendelsham*: Mrs. Z. A. Bignell (5), Miss P. Foster (5); *Saddleworth*: Mrs. G. S. Crawford (5), Miss G. E. Frost (5); *Sheoak Log*: Mrs. V. A. Bowden (6), Miss K. Bamman (4); *Snowtown*: Mrs. B. Thomas (5), Mrs. A. M. Robinson (5); *Tantanoola*: Mrs. H. J. Edgcumbe (5), Mrs. W. Pycroft (5); *Taplan*: Mrs. P. Flynn (5), Mrs. B. Moffatt (5); *Warcowie*: Miss L. G. Martin (6); *Warramboo*: Mrs. A. M. Steer (5), Miss J. P. Patterson (5), *Wasleys*: Mrs. A. W. Wilson (1), Miss J. Braun (4); *Wepowie*: Mrs. J. Burns (5), Miss E. Roocke (6); *Wilkawatt*: Mrs. A. Sumsion (4), Mrs. H. H. Pritchard (5); *Williamstown*: Mrs. J. S. Hammat (6), Mrs. G. E. Cundy (0); *Wilmington*: Mrs. L. Cole (6), Mrs. J. M. Pengilly (6); *Wirrabara*: Mrs. A. Curtis (6), Mrs. A. Kranz (5); *Wirrilla*: Mrs. W. R. Woods (2), Miss J. Schunke (4); *Yurgo*: Mrs. M. Hopgood (6), Mrs. N. Easton (5).

Tuesday, 17th September.

Morning Session.

(Sessions were held in the Women's Non-Party Rooms, Grenfell Street.)

Mrs. J. S. Hammat, of Williamstown, was elected unopposed as President, an she has been asked to fill every year since the Women's Branches held their ...ngress.

E. Eglinton, head cutter of Messrs. Charles Birks & Co. Limited, gave ...ion, "Alterations and Adjustments of Patterns and Garments."

Whitwarta Light's Pass Green...

PASTRY.

[Miss M. Stott, Eurelia.]

"For a dozen batches of pastry spoilt in making, a hundred are spoilt in the baking."

A good heat to start with is a necessity, and in the baking of small pastry generally a sharp heat may be maintained to the end.

For pies, &c., of a plain sort, and with a thick paste, the heat must be slightly reduced after the pastry has risen, so that the contents may have time to cook properly.

More care is needed in baking raised pastry, both sweet and savoury, as there is more or less fear of scorching. Should an article become brown enough before it is sufficiently cooked, a sheet of slightly wetted or greased paper should be twisted or laid over it. A tray of salt is used by some bakers to put under a pie should the oven be too fierce.

To test the heat of the oven a little dry flour may be sprinkled on the shelf or baking-tin, and should it turn brown at once, the oven is far too quick even for smallgoods; *a pale straw-colour is indicative of the right heat* for pies and solid pastry generally, while for small articles the tint should be a trifle deeper. Should the flour not turn a colour at all for the first minute, the articles must be put by for a time, as the oven is too slow for any pastry.

To know when pastry is done appears troublesome to beginners, though it is really very simple. The time when one is most likely to be misled is in the case of a pie, &c., that becomes just a light brown, and, of course, the surface of the pastry appears to be baked. When any doubt exists the point of a steel skewer or small knife should be inserted in the centre of the crust; if it can be withdrawn clean it is done, but should soft particles stick to the knife, it is not baked enough.

METROPOLITAN AND EXPORT ABATTOIRS, ADELAIDE

MANUFACTURERS OF

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Read Report of Trials made by Prof. Perkins, *Journal of Agriculture*, January and July, 1921.

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The GENERAL MANAGER, Metropolitan and Export Abattoirs Board, Gepp's Cross, S.A.

ALSO MANUFACTURED—

BLOOD MANURE. BONE MANURE. BONE MEAL.

There is yet left a way of damaging if not actually spoiling the cooking, that is, to take it straight from the oven to the pantry or cellar, and this is often done for want of thought. The change in the temperature is too sudden, and the pastry will be far less light than if left in the place it is baked in for a time before removal.

Crust.—1lb. flour, 2ozs. sugar, 3ozs. butter, 1 tablespoon sugar, one-third of a pint of water. Rub butter into flour very smoothly, add sugar, then mix to a smooth paste with milk. Roll thin and bake in a moderate oven.

A DINNER FOR FORTY PERSONS.

[Miss J. Braun, Wasleys.]

Although catering is not an everyday subject, occasionally we are asked to cater for a number of people, and the question arises: what we need and how much. Bureau Conferences, for instance, are often arranged by a committee of women, and this paper may be helpful to some. I have written my paper according to experience gained by me over a number of years. The following is ample for 40 persons:—Menu: Cold roast turkey and pickled pork, cold roast sirloin of beef, cold roast lamb and mint sauce, cold ox tongue. Vegetables: French beans, pumpkin, baked and mashed potatoes. Sweets: Plum pudding and brandy sauce, apple pie and cream, sago custard, trifle and jelly, celery, cheese, fruit.

First, consider the size of the turkeys. Two 20lb. ones will be required. These should be obtained two days before, dressed and cleaned, and then next day stuffed and cooked. The seasoning required for turkeys of this size is 2½ loaves stale bread, dripping, 2 large onions, 2 eggs, salt, pepper, and mixed herbs. Rub the bread down, rub dripping through, add onions, chopped parsley, herbs, pepper, and salt, and bind with 2 eggs well beaten. Stuff the breast also. Bake in a moderate oven for 4 hours, basting several times.

1 leg of pickled pork, about 8lbs.; boil about 3 hours the day before required.

1 sirloin of roast beef, about 4lbs., cook 1½ hours.

1 leg of lamb, about 5lbs., cook about 2 hours.

1 ox tongue, boil according to size, put into mould and press.

Always serve pickles and sauces with cold meats, but vegetables take the place of salads, and this is the quantity required:—8lbs. of French beans, 80 pieces of pumpkin, 80 pieces of boiled potatoes, and 40 pieces of potatoes for baking.

Sweets.

Plum Pudding.—Mix the dry ingredients the day before required. 1lb. suet (finely chopped), ½lb. flour, ½lb. breadcrumbs, 1lb. stoned raisins, 1lb. currants, ½lb. sultanas, ½lb. mixed peel, 1oz. mixed spice, 1 grated nutmeg, ½lb. sugar; mix together, with 1½ cups milk, to which has been added 2 teaspoons carbonate soda dissolved in boiling water. Put into a dry but well floured cloth and boil for 4 hours. This serves about 20 people. Double this quantity for 40.

Apple Pie.—Stew 8lbs. apples, add cloves, 2lbs. sugar, water.

Pastry.—The puff pastry can be bought; 2lbs. makes about 40 2in. squares.

Sago Custard.—A 4-egg custard is required.

Trifle and Jelly.—Allow a bowl of trifle to every 5 persons, and the same quantity of jelly. Line the bowl with stale sponge cake and moisten with Muscat wine. Pour over boiled custard and add chopped almonds and cocoanut.

Jellies.—Four 6d. packets of jelly crystals, each of a different kind and colour.

Afternoon Session.

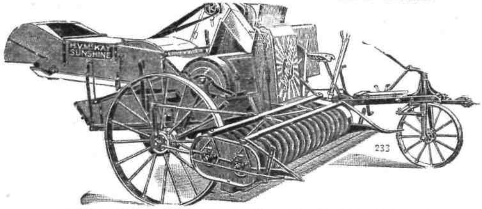
THE FLOWER GARDEN.

[Miss J. Halliday, Parrakie.]

How many people stop to think of the value of flowers? How pleasing and cheering it is to be able to go into one's garden for awhile. At times flowers may be real company. We watch with interest from the time the seeds are planted until the first bud appears and it bursts to display its fine colour.

SUNSHINE MASSEY HARRIS
HARVESTING MACHINES

REAP BULK OF AUSTRALIA'S GRAIN CROP.



SUNSHINE HEADER HARVESTER 6ft., 8ft. 10ft.

Even when crops are badly infested with thistles or other weeds, and the crop is storm beaten and tangled, these Machines equipped with modern Croplifters will raise the grain and procure all the heads possible. *Write for Catalogue, Prices and Terms.*

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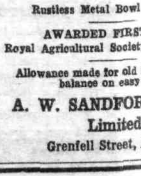

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Grenfell Street, Adelaide.

Flowers are most extensively used for decorating, and how they do help to beautify the home, churches, and hospitals—inside as well as out.

Gardening in the outback areas is quite a different problem to gardening in the city. In the country there are very few rock gardens to be seen, with crazy paths, and tiny green Lippia plants creeping between the stones.

Here, there are many disadvantages to contend with. A very good way to border the garden beds is with stone; small beds are to be preferred to large; they are easier to water and weed and also pick the flowers.

Mallee roots of uniform size and trimmed make very good borders, and can be made to have a very effective appearance if a border of Pansies, Virginian Stocks, or in the summer Portulacca, are planted to form thee borders. Two things are essential for successful flower gardening—suitable water and just that little effort made at the right time of the year.

Usually it is hard to keep the garden paths free from weeds, but if rubble is spread and rammed down, the difficulty should be overcome. It is advisable to lay the garden out on the sunny side of the house, and shelter it as much as possible.

There are various flowers that are perennial, and when cut back after flowering —with the exception of being watered—need very little attention, such as Chrysanthemums and Perennial Asters.

The garden should be watered either before the sun rises or after it sets; it is not harmful to let the water run slowly from the hose during the day around the roots of the plants. If plants are established before the winter really begins—while the soil still retains some of its warmth—they will have a chance to become established before it is too cold.

It is quite easy to raise young plants in seed-boxes, and the transplanting can be carried out when the weather is favourable. Raise the seedlings in the home garden, and then they are accustomed to the climate. Plenty of old manure well worked into the soil and a very little superphosphate put around each plant just before flowering, will hasten the growth.

Iceland Poppies, Pansies, Linarias, Stocks, and Marigolds planted in January or February will provide winter flowers.

There are also many shrubs that will help to make the garden look green, and generally improve the surroundings of any homestead.

HOUSEHOLD PESTS AND THEIR CONTROL.

[Mrs. W. E. Symonds, Belalie.]

Not only are humans subject to attack by insects and other parasites, but stores of food, furnishings, structural timbers, and the sheltered conditions found in the household, offer attraction to many destructive pests, most of which are insects.

The number of inquiries each year from correspondents to daily and other papers shows that the depredation of household pests is a very important matter and must result in considerable loss. This loss is not always due so much to the quantities devoured by the pests, as to the waste of material condemned because of their presence.

INSECTS ATTACKING FOODSTUFFS.

Blowflies.

This group offers the widest range of household pests, the most conspicuous of which is the blowfly. Of the several species in this country, the most troublesome are the large Blue Bottle or the Brown Blowfly; the former is the more conspicuous and has been described as the "noisy spoiler of meat." These flies normally breed in decaying animal matter and enter dwellings for the purpose of shelter, but they are more often attracted by odours. Apart from the annoyance caused by these insects, they readily deposit their eggs upon exposed meat.

The control of Blowflies is a community matter. It is useless for an individual to attempt control if his neighbours do not join in the campaign. It has been found that Blowflies will travel a radius of fully 10 miles from their breeding grounds. A great deal could be done to check the nuisance by organised effort in the burial or burning of all carcasses in accumulations of decaying organic matter in municipal dumps as well as on farms and in back yards.

Wire screens at doors and windows are a necessity. In regard to protecting meat from Blowflies, there should be no trouble if a fly-proof safe is used. Troughs attached to windows are a wonderful help; fill these with kerosene and all stray flies will be trapped.

Though the ordinary wire screen or perforated zinc is sufficient to protect food from large insects, it is necessary to use fine mesh wire gauze to exclude certain very small flies that are sometimes troublesome. One such is a small black insect that breeds in meat of all kinds. Another is the Pomace-Fly, orange coloured, the maggots of which live in fruit, pickles, and milk, etc. A third and somewhat larger fly is the Cheese Skipper Fly, the maggots of which infest cheese and are able to leap four or five inches.

All these flies reproduce very rapidly—a generation developing within a fortnight. It is unwise to eat food contaminated by these insects, as the larvae are able to live in the human digestive tract and cause irritation.

A constant watch must be kept on the Common House Fly, and tanglefoot, poison paper, insectibane, and fly-tox can all be used with good effect.

Of the other insects feeding on a wide range of foodstuffs may be mentioned Silver Fish, Cockroach, Cricket, Larder Beetle, and Ants.

Silver-Fish.

Silver Fish are wingless, torpedo-shaped insects, covered with a silvery dust. They have a pair of long feelers from the head and three tail-like appendages from the end of the body. They run swiftly and readily evade capture. Their food is principally of a starchy nature and they are found in dark cupboards, or among books and behind wall papers—the glaze and starch from which affords them nourishment. It should be borne in mind that Silver Fish thrive best when undisturbed, consequently the frequent cleansing of cupboards and dusting of books will tend to restrain their development. In cases of severe infestation, frequent dusting with Pyretheum Powder is an effective means of control.

Cockroaches.

These insects abound in kitchens and pantries, where conditions are warm and moist and where there is abundant food supply. These conspicuous insects are more or less oval in outline, flattened with spring legs. During the day they lie concealed in any convenient crevice and emerge at night to seek food; they run

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very rapidly when disturbed to the nearest shelter and are omnivorous in their diet. The eggs of cockroaches are enclosed in a small horny capsule and placed in a crevice where there is sufficient moisture and warmth. The young insects, although smaller, resemble the parents in general appearance. When a house is badly infested by Cockroaches, the only reliable remedy is to fumigate with Calcium Cyanide, a procedure very dangerous to life and necessitating the complete vacation of the premises for the time being. For mild infestations, however, dusting with Pyretheum will suffice; other remedies are Borax sweetened with sugar, and cucumber rind.

Crickets.

Another species that sometimes invades houses is the Black Cricket; the insect that sings shrilly during the night from spring to autumn. It is related to the Cockroaches. There have been times when during a plague of these Crickets in New Zealand they have not only devoured the vegetation out of doors but entered houses and eaten such things as wall paper, shoes, etc.

Larder Beetle.

Frequently considerable damage is done to animal food products such as all kinds of meats, cheese, skins, and feathers, by the larvae of the Larder Beetle. The larvae are covered with hairs and have a pair of spines on the back close to the end of the body; they are dark brown in colour and reach a length of about half an inch. All foods infected with this insect should be destroyed and the store room thoroughly cleaned out and treated with Pyretheum.

Ants.

In certain localities Ants are troublesome and it is a very difficult matter to protect food from them. Ants construct their colonies underground in rotten trees, posts, and between the walls of buildings. Where garden plants are infested with scale and aphids, the ants are attracted for the purpose of collecting the sweet "honey dew" excreted by these insects.

In the control of Ants the following steps should be taken:—If possible, locate the colonies by following the colonies of foraging ants. Where this is done then simply treat the breeding grounds with boiling water—the most effective insecticide.

As a further precaution spray all garden plants infested with scale and aphides, using Red Oil for the former and Black Leaf 40 for the latter.

Sometimes the ant colony cannot be located, especially if it is situated beneath a house or between the walls. It is then necessary to resort to poisoning. Purple Powder is best for this.

Flour Moth.

The next group of insects are less cosmopolitan in their tastes, restricting their depredations to farinaceous products. The most common of these is the Mediterranean Flour Moth, the caterpillars of which web together into masses by means of the silk they spin.

Another related insect is the Indian Meal Moth, the caterpillars in this case, which feed upon meal, nuts, fruits, raisins, and currants, do not web together the food they eat.

In addition to these moths, oatmeal and such-like products are attacked by the larvae of certain beetles, for example, the Yellow Meal Worm and the Cadelie. The former larvae is hard and shiny, yellowish in colour, with reddish-brown transverse bands, and grows to a length of a little over 1in., while the latter is whitish with a reddish-brown head, and attains a length of about ¾in.

To control insects infesting flour meal and similar products it is a simple matter to store these materials in insect-proof containers. When small quantities of material are infested, the insects can be destroyed by placing the material in an oven at a temperature of 130 to 140 degrees Fahr., the insects' remains can then be removed by sifting.

INSECTS ATTACKING FABRICS.

A considerable amount of destruction of clothes, carpets and tapestries is brought about by insects. The clothes moths are the most universal in this respect. There are two important species—the web-spinning species and the case maker. Both are small insects about ¼in. long when the wings are closed, the former being a pale yellow colour and the other a dark buff with the wings spotted. They frequent places where the light is subdued, and cannot tolerate direct sunlight—a point to be remembered. The larvae of the web spinners construct silk shelters in the material infested, whilst those of the case maker spin tightly woven tubular cases to which pieces of fabric are attached, and in these shelters they spend their lives.

If fabrics are to be stored for any length of time, then it is essential to protect them from Clothes Moths by placing them in insect-proof chests or in cardboard boxes or paper bags sealed with paper strips. It is desirable also to scatter fresh Napthalene amongst the fabrics. In any case it is advisable to thoroughly brush stored materials periodically, and hang them for a time in direct sunlight.

Where infestation has already taken place, put the fabrics to be treated in an airtight trunk and lay on them a saucer containing about 3 fluid ounces of Carbon Bisulphide, close and seal the lid, and allow it to stand for 48 hours in summer temperature or longer in winter.

No naked flame should be exposed in the vicinity during fumigation as this fumigant is highly inflammable.

Sometimes upholstering and carpets are attacked, but this can be overcome by treating with Benzine or by the frequent use of a vacuum cleaner. The Clothes Moths larvae may frequent floor cracks where dust has accumulated, and such places should be thoroughly cleaned out. Damage is also done to the felt on piano keys, but treating the felt with Benzine will remedy the matter

THE HOUSE FLY.

Certain insects beyond causing annoyance to humanity are also important carriers of disease. Their control is, therefore, of paramount importance. The insect most responsible for the dissemination of diseases is the common House Fly. These insects spread tuberculosis, typhoid, dysentery, and infantile diarrhoea. It is thus a menace to health.

1935 CALENDAR 1935

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1936 CALENDAR 1936

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NOVEMBER

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DECEMBER

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● FULL MOON

The secret of control is to destroy the breeding grounds of the House Flies and eliminate all places that serve as an attraction. For this, community co-operation is essential, because such places as a garbage dump, fowl run, or manure heap produce flies that will spread over an area of several miles. All dead animals should be burnt or buried.

MOSQUITOES AND FLEAS.

There are several species of insects that are responsible for considerable discomfort caused by the irritating wounds they make when drawing blood. The commonest of these bloodsuckers are Mosquitoes and Fleas. In regard to Mosquitoes it is fortunate that there are none of the disease-carrying forms (that is, Malaria or Yellow Fever) in South Australia, but this fact is no doubt largely responsible for neglect in any attempt to control the species that are with us. In the vicinity of dwellings Mosquitoes are easily controlled by removing all disused receptacles likely to retain water. In the case of tanks for drinking water, if the manhole or inlet is close fitting no Mosquitoes can enter to lay their eggs, while a little bluestone is sufficient to prevent the insects breeding in water troughs.

Fleas are of many kinds, each having its own particular type of animal. For example, there is a distinct species of Flea peculiar to the domestic fowl, rat, mouse, dog, cat, man, &c., though these Fleas do not hesitate to attack animals other than their own hosts. These insects are extremely active, with powerful jumping legs. Their breeding grounds are mostly the sleeping quarters of the animals they infest, and get into the cracks of floors. Domestic animals should be kept as free from Fleas as possible, and their sleeping quarters cleaned and treated with Creosote. Insectibane is also good.

The floors of fowlhouses can be kept free from Fleas by a dressing of common salt. In many places Spiders, though harmless, have a tendency to congregate and spin their webs in and about dwellings. Sweeping away the webs and spraying with Kerosene Pyretheum to drive off the spiders is about the only remedy, or the removal of both webs and spiders can be accomplished by a vacuum cleaner in one act.

A discussion of household pests would be incomplete without mention of the common Mouse which if left unchecked, can cause as much destruction as the insects already discussed. The most effective way is organised trapping. An excellent bait being a mixture of peanut butter, rolled oats, chopped raisins, and a drop or two of aniseed oil.

A demonstration on cuts of mutton and pork was given at the afternoon session by Mr. T. Phelps, of Kither's, who cut up a sheep in front of the audience and answered many questions about the economical use and preservation of meat.

Delegates attended the Evening Session of the Men's Branches.

(To be continued.)

COOKING AND FANCYWORK COMPETITION.

In conjunction with the Annual Social of the Parilla Well Women's and Men's Branches of the Agricultural Bureau, which was held on 20th August, the Women's Branch conducted a Cooking and Fancywork Competition. A record total of 219 entries was received. There was an attendance of approximately 150 members and visitors.

Mr. M. S. Davis (President of the Men's Branch) occupied the chair, and whilst the exhibits were being judged, an enjoyable musical and vocal programme was carried out. Mr. F. C. Richards (Assistant Secretary of the Agricultural Bureau) addressed the meeting, and on behalf of the Advisory Board presented to Mr. G. S. Backman a Life Membership Certificate of the Agricultural Bureau.

The following is the list of prize winners:—

JUNIOR SECTION.

Judges—Mesdames C. R. Mattiske, A. Hawthorne, and J. T. Longford, of Pinnaroo.

Iced cake—1st, Miss V. Ireland: 2nd, Miss D. Thiel. Scones—1st, Miss D. Thiel; 2nd, Miss J. Blacksell. Biscuits—1st, Miss Gwen Simpson; 2nd, Miss V. Ireland. Butter—1st, Miss J. Blacksell; 2nd, Miss Edna Pahl. Scalded cream—1st, Miss V. Ireland; 2nd, Miss D. Johnston. Separator cream—1st, Miss J. Blacksell; 2nd, Miss D. Thiel.

FANCY WORK.

Bonnet and bootee—Miss V. Beckman, 1st and 2nd. Vanity set—1st, Miss D. Thiel; 2nd, Misses E. Pahl and A. Billing. Supper cloth—Miss E. Pahl, 1st and 2nd. Crochet d'oyley—1st, Miss Avis McInerney. Guest towel—1st, Miss V. Ireland; 2nd, Miss A. Billing. Pair pillowshams—1st, Miss D. Thiel; 2nd, Miss A. Billing. Knitted jumper—1st, Miss Ireland; 2nd, Miss A. Billing.

Mrs. Napper secured the trophy for most points in adult section and Miss V. Ireland in the junior section.

JAMS, PRESERVES, ETC.

Judges—Mesdames Atze and Phillis and Miss Trowbridge, of Karte.

Preserved fruit—1st, Miss D. Thiel; 2nd, Miss V. Ireland. Three varieties jam—1st, Mrs. Napper; 2nd, Mrs. C. Lloyde. Three varieties jellies—1st, Mrs. Beckman. Chutney—1st, Mrs. Napper. One jar marmalade—1st, Mrs. M. S. Davis; 2nd, Mrs. Lloyde. Three jars pickles—1st, Mrs. Beckman; 2nd, Mrs. Napper. Tomato sauce—1st, Mrs. Napper; 2nd, Mrs. Blacksell. Butter—1st, Mrs. Lloyde; 2nd, Mrs. Slater. Glass scalded cream—1st, Mrs. Slater; 2nd, Mrs. Venning. Glass separated cream—1st, Mrs. Wurfel; 2nd, Mrs. Slater.

CAKES, ETC.

Judges—Mesdames Johnson and Carmen and Miss Colwill, of Parilla.

Dark fruit cake—1st, Mrs. Blacksell; 2nd, Mrs. Napper. Sultana cake—1st, Mrs. Blacksell; 2nd, Mrs. Ireland. Coffee cake—1st, Mrs. M. S. Davis; 2nd, Mrs. R. J. Billing. Yeast coffee cake—1st, Mrs. Simpson; 2nd, Miss E. Pahl. Ribbon cake—1st, Mrs. Lloyde; 2nd, Mrs. Beckman. Walnut roll—2nd, Miss Joan Blacksell. Nut and fruit loaf—1st, Mrs. C. Napper; 2nd, Mrs. L. Ireland. Cream puffs—1st, Miss D. Thiel; 2nd, Miss Beckman. Collection puff pastry—1st, Mrs. Napper; 2nd, Mrs. Ireland. Scones—1st, Mrs. Blacksell; 2nd, Mrs. B. Pahl. Biscuits—2nd, Mrs. Ireland. Six different pieces iced cake—2nd, Mrs. Ireland. White sponge—1st, Mrs. B. Pahl; 2nd, Miss J. Blacksell. Brown sponge—1st, Mrs. B. Pahl; 2nd, Mrs. Napper. Six fancy afternoon tea cakes—1st, Mrs. Napper; 2nd, Mrs. Ireland. Small cakes—1st, Mrs. N. Venning; 2nd, Mrs. Napper. Yeast buns—1st, Mrs. R. J. Billing; 2nd, Miss V. Ireland. Sausage rolls—1st, Mrs. Beckman; 2nd, Mrs. Slater. Jam tarts—1st, Mrs. Beckman. Bread—1st, Mrs. R. J. Billing; 2nd, Mrs. Slater.

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OTHER REPORTS RECEIVED.

Branch.	Date of Meeting.	Attendance.	Subject.	Secretary.
			WOMEN'S BRANCHES.	
Millicent	16/8/35	11	Paper—Mrs. Redman ...	Miss K. M. Hutcheson
Warcowie	27/8/35	—	Social. Addresses—E. L. Orchard and E. C. Richards	Miss L. G. Martin
Auburn	29/8/35	18	Annual Meeting	Miss L. J. Dennison
Warramboo	30/8/35	13	Question Box	Miss J. P. Patterson
Saddleworth ...	19/8/35	—	Visit to Riverton High School	Miss G. E. Frost
Saddleworth ...	3/9/35	12	Woolwork Display	Miss G. E. Frost
Balumbah......	4/9/35	11	"My Outlook of Life"—Miss C. Riches	Miss H. D. Jericho
Rendelsham ...	4/9/35	13	"Home Made Sweets" .	Mrs. Z. A. Bignell
Wasleys	5/9/35	43	Annual Meeting and Social	Miss G. Harding
Sheoak Log	5/9/35	28	Visit to Gwynne's Nurseries Gawler	Miss K. M. Koch
Pinnaroo	6/9/35	18	"First Aid"—Matron Richards	Miss N. A. Mattiske
Mangalo	14/8/35	—	Concert and Dance	Mrs. F. Coles
Mangalo	4/9/35	14	Annual Meeting	Mrs. F. Coles
Coonawarra	21/8/35	29	Annual Meeting	Mrs. O. Skinner
Georgetown	10/9/35	34	Inaugural Meeting	Miss J. Crawford
Pygery	20/8/35	14	Homestead Meeting at Mrs. J. Foster's residence	Mrs. A. R. Kammermann
Pygery	17/9/35	9	Butter-pressing demonstration, Mrs. G. Duggin	Mrs. A. R. Kammermann
Parilla Well	3/9/35	21	Show Exhibit Arrangements	Mrs. J. E. Johnston
McLaren Vale ..	5/9/35	45	Social Afternoon	Mrs. B. Powell
O'Loughlin	9/9/35	16	Pastry Competition	Mrs. E. Lutz
Pinbong	7/9/35	12	Inaugural Meeting	Miss Doreen Scholz
Tantanoola	11/9/35	14	Sultana Cake Competition	Mrs. G. Altschwager
Kalangadoo	7/9/35	7	Arrangements for Cooking Competition	Mrs. M. Brooks
Mudamuckla ...	12/7/35	7	"Floriculture"—Miss G. Kreusler and Mrs. Kuhlmann	Mrs. C. Kuhlmann
Millicent	20/9/35	9	Pickle and Citrus Fruit Recipes	Miss K. M. Hutcheson
Laura Bay	14/5/35	13	"Uses of Eggs"—Mrs. W. Bowell; "Gardening" Mrs. E. Lowe	Miss T. Barnett
Belalie	11/6/35	68	Annual Exhibition and Competitions	Mrs. E. L. Orchard
Monarto South .	21/9/35	26	"Our Daily Bread"—Miss Aesche	Mrs. F. W. Liebelt
Maltee	5/9/35	11	"Bread Making"—Mrs. C. T. Schwarz	Miss L. Bassham
Boor's Plains ..	5/9/35	18	"Pastry Making"—Mrs. T. A. Stanway	Miss L. Stanway
Morchard	28/8/35	8	"Jam Making"—Mrs. R. F. Brown	Miss F. Brown
Tantanoola	5/6/35	14	Pudding Recipes	Mrs. E. Telfer
Wasleys	4/7/35	22	Recipes and Exhibits ...	Miss J. Braun
Wepowie	1/5/35	15	Conference Arrangements	Miss E. Roocke
Wepowie	29/5/35	9	Recipes	Miss E. Roocke